Union Calendar No. 672

98th Congress, 2d Session - - - - - - - - - - - - - - - - - - House Report 98-1189

SUMMARY OF ACTIVITIES

OF THE

COMMITTEE ON SCIENCE AND TECHNOLOGY

U.S. HOUSE OF REPRESENTATIVES

FOR THE

NINETY-EIGHTH CONGRESS

JANUARY 2, 1985

JANUARY 2, 1985.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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*Serving on Committee on the Budget for the 98th Congress.

LETTER OF TRANSMITTAL

COMMITTEE ON SCIENCE AND TECHNOLOGY,
U.S. HOUSE OF REPRESENTATIVES,
Washington, DC, January 2, 1985.

Hon. THOMAS P. O'NEILL, Jr.,
Speaker of the House, The Capitol,
Washington, DC.

DEAR MR. SPEAKER: In compliance with Rule XI, Clause 1(d) of the Rules of the House of Representatives, there is transmitted herewith the Summary of Activities of the Committee on Science and Technology for the 98th Congress.

The purpose of this report is to provide the Members of the House of Representatives, and the general public, with an overview of the legislative and oversight activities conducted by this committee, pursuant to Rule X, Clause 1(r) and Clause 3(f) of the Rules of the House of Representatives.

This document is intended as a general reference tool, and not as a substitute for the hearings records, reports, and other committee files.

Sincerely,

DON FUQUA, *Chairman.*

Enclosure.

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Union Calendar No. 672

98TH CONGRESS *2d Session* | HOUSE OF REPRESENTATIVES | REPORT 98-1189

REPORT OF ACTIVITIES—COMMITTEE ON SCIENCE AND TECHNOLOGY

JANUARY 2, 1985.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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Mr. FUQUA, from the Committee on Science and Technology, submitted the following

REPORT

HISTORY OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY

The Committee on Science and Technology had its roots in the intense reaction to the Soviet launch of Sputnik on October 4, 1957. Early in 1958 Speaker Sam Rayburn convened the House of Representatives, and the first order of the day was a resolution offered by Majority Leader John McCormack of Massachusetts. It read, "Resolved that there is hereby created a Select Committee on Astronautics and Space Exploration . . ."

The Select Committee performed its tasks with both speed and skill by writing the Space Act creating the National Aeronautics and Space Administration and chartering the permanent House Committee on Science and Astronautics, now known as the Committee on Science and Technology, with a jurisdiction comprising both science and space.

The Science and Astronautics Committee became the first standing committee to be established in the House of Representatives since 1946. It was also the first time since 1892 that the House and Senate had acted to create standing committees in an entirely new area.

The committee officially came into being on January 3, 1959, and on its 20th Anniversary the Honorable Charles Mosher wrote, the committee "was born of an extraordinary House-Senate joint leadership initiative, a determination to maintain American preeminence in science and technology, . . ."

The formal jurisdiction of the Committee on Science and Astronautics included outer space, both exploration and control, astronautical research and development, scientific research and development, science scholarships, and legislation relating to scientific agencies, especially the National Bureau of Standards, the National Aeronautics and Space Administration, the National Aeronautics and Space Council and the National Science Foundation.

The committee retained this jurisdiction from 1959 until the end of the 93rd Congress in 1974. While the committee's original emphasis in 1959 was almost exclusively astronautics, over this 15-year period the emphasis and workload expanded to encompass scientific research and development in general.

In 1974, a Select Committee on Committees, after extensive study, recommended several changes to the organization of the House in H. Res. 988, including expanding the jurisdiction of the Committee on Science and Astronautics, and changing its name to the Committee on Science and Technology.

To the general realm of scientific research and development was added energy, environmental, atmospheric, and civil aviation R&D. In addition, the new committee was given jurisidiction over the National Weather Service.

In addition to these legislative functions, the Committee on Science and Technology was assigned a "special oversight" function, giving it the exclusive responsibility among all Congressional Standing Committees to review and study, on a continuing basis, all laws, programs and government activities involving Federal nonmilitary research and development.

In 1977, with the abolition of the Joint Committee on Atomic Energy, the Committee was further assigned jurisdiction over civilian nuclear research and development thereby rounding out its jurisdiction for all civilian energy R&D.

A committee's jurisdiction gives it both a mandate and a focus. It is, however, the committee's chairman that gives it a unique character. The Committee on Science and Technology has had the good fortune to have four very talented and distinctly different chairmen, each very creative in his own way in directing the committee's activities.

Congressman Overton Brooks was the Science and Technology Committee's first chairman, and was a tireless worker on the committee's behalf for the two and one-half years he served as chairman.

When Brooks convened the first meeting of the new committee in January of 1959, committee Member Ken Hechler recalled, "There was a sense of destiny, a tingle of realization that every member was embarking on a voyage of discovery, to learn about the unknown, to point powerful telescopes toward the cosmos and unlock secrets of the universe, and to take part in a great experiment." With that spirit the committee began its work.

Brooks worked to develop closer ties between the Congress and the scientific community. On February 2, 1959, opening the first official hearing of the new committee Chairman Brooks said, "Although perhaps the principal focus of the hearings for the next several days will be on astronautics, it is important to recognize that this committee is concerned with scientific research across the

board." And so, from the beginning, the committee was concerned with the scope of its vision.

Overton Brooks died of a heart attack in September of 1961, and the chairmanship of the committee was assumed by Congressman George Miller of California.

Miller, a civil engineer, was unique among Members of Congress who rarely come to the legislature with a technical or scientific background. He had a deep interest in science, and his influence was clearly apparent in the broadening of the charter of the National Science Foundation and the establishment of the Office of Technology Assessment. He pioneered in building strong relationships with leaders of science in other nations. This work developed the focus for a new subcommittee established during his chairmanship, known as the Subcommittee on Science, Research and Development.

Just a few months before Miller became Chairman, President John F. Kennedy announced to a joint session of Congress the national commitment to land a man on the moon and return him safely to Earth before the end of the decade. Thus, during Miller's 11-year tenure as chairman, the committee directed its main efforts toward the development of the space program.

Chairman Miller was not reelected and in January of 1973, Olin E. Teague of Texas took over the helm of the committee. Teague, a man of directness and determination, was a highly decorated hero of the second World War and a long standing Member of Congress who was Chairman of the Veterans Committee before taking over the Science and Technology Committee.

Throughout the 1960's and early 1970's Teague chaired the Science Committee's Manned Space Flight Subcommittee, and in that capacity had firmly directed the efforts to send a man to the moon.

As chairman of the Full Committee, Teague placed heavy emphasis on educating the Congress and the public on the practical value of space. He also prodded NASA to focus on the industrial and human applications of the space program.

One of Teague's first decisions as chairman was to set up a subcommittee on energy. During his six-year leadership of the committee, energy research and development became a major part of the committee's responsibilities.

In 1976, Chairman Teague saw the fruition of three years of intensive committee work to establish a permanent presence for science in the White House. The Office of Science and Technology Policy was established with a Director who would also serve as the President's Science Advisor.

Throughout his leadership, he voiced constant concern that the complicated technical issues the committee considered be expressed in clear and simple terms so that Members of Congress, as well as the general public, would understand the issues.

After six years as Chairman, Teague retired from the committee and the Congress due to serious health problems. His successor and the present Chairman of the committee is Congressman Don Fuqua of Florida.

Fuqua became Chairman on January 24, 1979, at the beginning of the 96th Congress. Fuqua is the youngest Member to succeed to the committee's chairmanship.

Don Fuqua came to the Congress after two terms in the Florida State Legislature and was, at age 29, the youngest Democrat in Congress when he was elected in 1962.

Fuqua's experience on the committee dated back to the first day of his Congressional service. Since 1963, he had served as a Member of the Committee's Manned Space Flight Subcommittee. When Olin Teague became chairman of the Full Committee in 1973, Fuqua took his place as chairman of the subcommittee.

As its chairman he was responsible for major development decisions on the Space Shuttle and the successful Apollo-Soyuz link-up in space between American astronauts and Soviet cosmonauts. Later, this responsibility was expanded to cover all other NASA activities when the subcommittee was renamed Space Science and Applications and given broadened jurisidiction.

Through Chairman Fuqua's leadership the commitee has expanded its activities to include technological innovation, science and math education, materials policy, robotics, technical manpower, and nuclear waste disposal. He has also worked to strengthen the committee's ties with the scientific and technical communities so that the committee is kept abreast of current developments, and can better plan for the future.

COMMITTEE ON SCIENCE AND TECHNOLOGY

DON FUQUA, Florida, *Chairman*

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TOM LEWIS, Florida

* Serving on Committee on the Budget for 98th Congress

HISTORY OF APPOINTMENTS

COMMITTEE ON SCIENCE AND TECHNOLOGY

NINETY-EIGHTH CONGRESS

The following Members were elected by H.Res. 26, adopted January 6, 1983: Don Fuqua (chairman), Florida; Robert A. Roe, New Jersey; George E. Brown, Jr., California; James H. Scheuer, New York; Richard L. Ottinger, New York; Tom Harkin, Iowa; Marilyn Lloyd, Tennessee; Doug Walgren, Pennsylvania; Dan Glickman, Kansas; Albert Gore, Jr., Tennessee; Robert A. Young, Missouri; Harold L. Volkmer, Missouri; Bill Nelson, Florida; Stan Lundine, New York; Ralph M. Hall, Texas; Dave McCurdy, Oklahoma; Mervyn M. Dymally, California; Paul Simon, Illinois; Norman Y. Mineta, California; Richard J. Durbin, Illinois; Michael A. Andrews, Texas; Buddy MacKay, Florida; Tim Valentine, North Carolina; Harry M. Reid, Nevada; Robert G. Torricelli, New Jersey; Frederick C. Boucher, Virginia.

The following Members were elected by H.Res. 27, adopted January 6, 1983: Larry Winn, Jr., Kansas; Manuel Lujan, Jr., New Mexico; Robert S. Walker, Pennsylvania; William Carney, New York; F. James Sensenbrenner, Wisconsin; Judd Gregg, New Hampshire; Raymond J. McGrath, New York; Joe Skeen, New Mexico; Claudine Schneider, Rhode Island; Bill Lowery, California; Rod Chandler, Washington; Herbert H. Bateman, Virginia; Sherwood L. Boehlert, New York; Alfred A. McCandless, California; Tom Lewis, Florida.

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PAUL SIMON, Illinois
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JAMES H. SCHEUER, New York
MARILYN LLOYD, Tennessee
ROBERT A. YOUNG, Missouri
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TOM LEWIS, Florida
WILLIAM CARNEY, New York
JUDD GREGG, New Hampshire

Robert S. Kripowicz, *Staff Director*

Natural Resources, Agriculture Research and Environment

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TOM HARKIN, Iowa
MICHAEL A. ANDREWS, Texas
BUDDY MacKAY, Florida
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George Kopp, *Staff Director and Counsel*

Energy Research and Production

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RICHARD L. OTTINGER, New York
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BUDDY MacKAY, Florida
ROBERT G. TORRICELLI, New Jersey
STAN LUNDINE, New York
PAUL SIMON, Illinois
RICHARD J. DURBIN, Illinois
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RAYMOND J. McGRATH, New York
JOE SKEEN, New Mexico
HERBERT H. BATEMAN, Virginia

EZRA HEITOWIT, *Acting Staff Director*

TRANSPORTATION, AVIATION AND MATERIALS

DAN GLICKMAN, Kansas, *Chairman*

ALBERT GORE JR., Tennessee
MERVYN M. DYMALLY, California
RICHARD L. OTTINGER, New York
TOM HARKIN, Iowa
MICHAEL A. ANDREWS, Texas
WILLIAM CARNEY, New York
SHERWOOD L. BOEHLERT, New York
ALFRED A. McCANDLESS, California

ANTHONY C. TAYLOR, *Staff Director*

INVESTIGATIONS AND OVERSIGHT

ALBERT GORE, JR. Tennessee, *Chairman*

HARRY M. REID, Nevada
HAROLD L. VOLKMER, Missouri
ROBERT A. ROE, New Jersey
RICHARD J. DURBIN, Illinois
JAMES H. SCHEUER, New York
JOE SKEEN, New Mexico
ALFRED A. McCANDLESS, California
CLAUDINE SCHNEIDER, Rhode Island

ROBERT B. NICHOLAS, *Staff Director and Counsel*

SPACE SCIENCE AND APPLICATIONS

HAROLD L. VOLKMER, Missouri, *Chairman*

BILL NELSON, Florida
MICHAEL A. ANDREWS, Texas
GEORGE E. BROWN, JR., California
RALPH M. HALL, Texas
MERVYN M. DYMALLY, California
NORMAN Y. MINETA, California
BUDDY MacKAY, Florida
ROBERT G. TORRICELLI, New Jersey
MANUEL LUJAN JR., New Mexico
BILL LOWERY, California
ROD CHANDLER, Washington
HERBERT H. BATEMAN, Virginia
ROBERT S. WALKER, Pennsylvania

DARRELL R. BRANSCOME, *Staff Director*

The Chairman and the Ranking Minority Member shall serve as ex officio members of all subcommittees and shall have the right to vote on all matters before the subcommittees, subject to the provisions of Rule 28* of the Committee Rules Governing Procedure.

* Effective July 26, 1983.

RULES GOVERNING PROCEDURE

OF THE

COMMITTEE ON SCIENCE AND TECHNOLOGY

U.S. HOUSE OF REPRESENTATIVES

98TH CONGRESS

(11)

GENERAL

1. The Rules of the House of Representatives, as applicable, shall govern the committee and its subcommittees. The rules of the committee, as applicable, shall be the rules of its subcommittees.

COMMITTEE MEETINGS

Time and Place

2. Unless dispensed with by the Chairman, the meetings of the committee shall be held on the 1st and 3rd Tuesday of each month the House is in session at 10:00 a.m. and at such other times and in such places as the Chairman may designate.

3. The Chairman of the committee may convene as necessary additional meetings of the committee for the consideration of any bill or resolution pending before the committee or for the conduct of other committee business.

*4. The committee shall make public announcement of the date, time, place and subject matter of any of its hearings at least one week before the commencement of the hearing. If the Chairman determines that there is good cause to begin the hearing sooner, he shall make the announcement at the earliest possible date. Any announcement made under this subparagraph shall be promptly published in the Daily Digest, and promptly entered into the scheduling service of the House Information Systems.

*5. The committee may sit while the House is reading a measure for amendment under the 5-minute rule, provided 10 or more Members on the House floor do not object when special leave for such committee or subcommittee to sit is requested.

Ranking Majority Member to Preside in Absence of Chairman

*6. If the Chairman of the committee is not present at any meeting of the committee, the ranking Member of the Majority Party on the committee who is present shall preside.

Order of Business

*7. The order of business and procedure of the committee and the subjects of inquiries or investigations will be decided by the Chairman, subject always to an appeal to the committee.

Membership

8. A majority of the Majority Members of the committee shall determine an appropriate ratio of Majority to Minority Members for each subcommittee and shall authorize the Chairman to negotiate that ratio with the Minority Party; *Provided, however*, that party representation on each subcommittee (including any ex-officio Members) shall be no less favorable to the Majority Party than the ratio for the full

*Indicates rules applicable to subcommittees.

committee. *Provided, further* that recommendations of conferees to the Speaker shall provide a ratio of Majority Party Members to Minority Party Members which shall be no less favorable to the Majority Party than the ratio for the full committee.

Special Meetings

9. Rule XI 2(c)(2) of the Rules of the House of Representatives is hereby incorporated by reference (Special Meetings).

COMMITTEE PROCEDURES

Quorum

*10. One-third of the Members of the committee shall constitute a quorum for all purposes except that a majority must be present in order to: (1) report or table any legislation, measure or matter; (2) close committee meetings or hearings; or (3) authorize the issuance of subpenas.

*11. The number of Members to constitute a quorum for taking testimony and receiving evidence shall not be less than two, one of whom shall be a Member of the Minority.

Proxies

12. Any Member may authorize a vote by proxy with respect to any measure or matter before the committee. Such proxy authorization shall be in writing, shall assert that the Member is absent on official business or is otherwise unable to be present at the meeting of the committee, shall designate the person who is to execute the proxy authorization, and shall be limited to a specific measure or matter and any amendments or motions pertaining thereto; except that a Member may authorize a general proxy only for motions to recess, adjourn or other procedural matters. Each proxy to be effective shall be signed by the Member assigning his or her vote, filed with the committee clerk, and shall contain the date and time of day that the proxy is signed. Proxies may not be counted for a quorum.

Witnesses

*13. The committee shall, insofar as is practicable, require each witness who is to appear before it to file with the committee (in advance of his or her appearance) a written statement of the proposed testimony and to limit the oral presentation at such appearance to a summary of his or her statement.

*14. Whenever any hearing is conducted by the committee on any measure or matter, the Minority Members of the committee shall be entitled, upon request to the Chairman by a majority of them, before the completion of the hearing, to call witnesses selected by the Minority to testify with respect to the measure or matter during at least one day of hearing thereon.

Investigative Hearing Procedures

15. Rule XI 2(k) of the Rules of the House of Representatives is hereby incorporated by reference (rights of witnesses under subpena).

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*Indicates rules applicable to subcommittees.

Subject Matter

*16. Bills and other substantive matters may be taken up for hearing only when called by the Chairman of the committee or by a majority vote of a quorum of the committee, except those matters which are the subject of special-call meetings outlined in Rule 9.

17. No private bill will be reported by the committee if there are two or more dissenting votes. Private bills so rejected by the committee will not be reconsidered during the same Congress unless new evidence sufficient to justify a new hearing has been presented to the committee.

*18. (a) It shall not be in order for the committee to consider any new or original measure or matter unless written notice of the date, place and subject matter of consideration and to the extent practicable, a written copy of the measure or matter to be considered, has been available in the office of each Member of the committee for at least three calendar days in advance of consideration, excluding Saturdays, Sundays and legal holidays.

(b) Notwithstanding the foregoing sections of this rule, consideration of any legislative measure or matter by the committee shall be in order by vote of two-thirds of the Members present, provided that a majority of the committee is present.

Open Meetings

*19. Each meeting for the transaction of business, including the markup of legislation, of the committee shall be open to the public except when the committee, in open session and with a quorum present, determines by roll call vote that all or part of the remainder of the meeting on that day shall be closed to the public. No person other than Members of the committee and such congressional staff and such departmental representatives as they may authorize shall be present at any business or markup session which has been closed to the public. This paragraph does not apply to open committee hearings which are provided for by Rule 20 contained herein, or to any meeting that relates solely to internal budget or personnel matters.

*20. Each hearing conducted by the committee shall be open to the public except when the committee, in open session and with a quorum present, determines by roll call vote that all or part of the remainder of that hearing on that day shall be closed to the public because disclosure of testimony, evidence or other matters to be considered would endanger the national security or would violate any law or rule of the House of Representatives. Notwithstanding the requirements of the preceding sentence, and Rule 10, a majority of those present, there being in attendance the requisite number required under the rules of the committee to be present for the purpose of taking testimony.

(A) may vote to close the hearing for the sole purpose of discussing whether testimony or evidence to be received would endanger the national security or violate clause 2(k)(5) of Rule XI of the Rules of the House of Representatives; or

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*Indicates rules applicable to subcommittees.

(B) may vote to close the hearing, as provided in clause 2(k)(5) of Rule XI of the Rules of the House of Representatives. No Member may be excluded from nonparticipatory attendance at any hearing of any committee or subcommittee, unless the House of Representatives shall by majority vote authorize a particular committee or subcommittee, for purposes of a particular series of hearings on a particular article of legislation or on a particular subject of investigation, to close its hearings to Members by the same procedures designated in this subparagraph for closing hearings to the public: *Provided, however*, That the committee or subcommittee may by the same procedure vote to close one subsequent day of hearing.

Requests for Roll Call Votes

21. A roll call of the Members may be had at the request of three or more Members.

Committee Records

*22. The committee shall keep a complete record of all committee action which shall include a record of the votes on any question on which a roll call vote is demanded. The result of each roll call shall be made available by the committee for inspection by the public at reasonable times in the offices of the committee. Information so available for public inspection shall include a description of the amendment, motion, order or other proposition and the name of each Member voting for and each Member voting against such amendment, motion, order or proposition, and the names of those Members present but not voting.

Publication of Committee Hearings

*23. The transcripts of those hearings conducted by the Committee which are decided to be printed will be published in verbatim form, with the material requested for the record inserted at that place requested, or at the end of the record, as appropriate.

Any requests by those Members, staff or witnesses to correct any errors, other than errors in transcription, or disputed errors in transcription, will be appended to the record, and the appropriate place where the change is requested will be footnoted.

Prior to approval by the Chairman of hearings conducted jointly with another Congressional committee, a memorandum of understanding will be prepared which incorporates an agreement for the publication of the verbatim transcript.

5-Minute Rule During Committee Proceedings

*24. The time any one Member may address the committee on any bill, motion or other matter under consideration by the committee or the time allowed for the questioning of a witness at hearings before the committee will be limited to five minutes, and then only when the Member has been recognized by the chairman, except that this time limit may be waived by the Chairman or acting Chairman. The rule of germaneness will be enforced by the Chairman.

Requests for Written Motions

*25. Any legislative or non-procedural motion made at a regular or special meeting of the committee and which is entertained by the chairman shall be presented in writing upon the demand of any Member present and a copy made available to each Member present.

SUBCOMMITTEES

Structure and Jurisdiction

26. The committee shall have the following standing subcommittees with the jurisdiction indicated.

(a) Subcommittee on Energy Development and Applications. Legislation, general and special oversight and all other matters relating to research, development and demonstration programs in fossil energy R&D; solar applications; solar technology; advanced energy technology; energy conservation; biomass; basic energy sciences; high energy and nuclear physics; geothermal energy; international cooperation in non-nuclear energy; and policy and management programs of the Department of Energy.

(b) Subcommittee on Natural Resources, Agriculture Research and Environment. Legislation, general and special oversight and all other matters relating to natural resources, including, but not limited to, water research, and, to the extent appropriate, agriculture R&D; legislation, risk assessment and other matters relating to environmental research and development generally—including, but not limited to, research and development activities of the Environmental Protection Agency; environmental health, safety, life sciences, pharmaceutical and medical activities of Executive departments and agencies, as appropriate; operational and research and development activities related to the atmosphere (including meteorology, aeronomy, climate, weather modification); those ocean R&D activities related to the quality and management of the environment of the National Oceanic and Atmospheric Administration; and activities relating to a land observing system.

(c) Subcommittee on Energy Research and Production. Legislation, general and special oversight and all other matters relating to research, development and demonstration involving nuclear fission and the nuclear fuel cycle; nuclear fusion, electric energy systems; energy storage systems; hydroelectric energy systems; international cooperation in nuclear matters (except for exports of nuclear technology and hardware); and policy and management programs of the Department of Energy.

(d) Subcommittee on Science, Research and Technology. Legislation, general and special oversight and all other matters relating to the National Science Foundation; the National Bureau of Standards; the Office of Science and Technology Policy; the Office of Technology Assessment; scientific research and development and applications; science policy; scientific resources (including manpower); science education; science information and information sciences; technology transfer; technology assessment; innovation, productivity, and industrial R&D; standards (weights, measures, etc.); patent policies as they relate to Federal research and development programs; R&D involving governmental health, nutritional and handicapped programs; biotechnology; intergovernmental mechanisms for R&D; and international cooperation in science and technology.

(e) Subcommittee on Transportation, Aviation and Materials. Legislation, general and special oversight and all other matters relat-

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*Indicates rules applicable to subcommittees.

ing to civil aviation research and development (includes aeronautical research and technology programs of the National Aeronautics and Space Administration and research and development programs of the Federal Aviation Administration); transportation programs of the Department of Energy; aviation-weather services; materials R&D and national materials policies, both domestic and international; oversight of surface transportation research and development programs of the Department of Transportation, Urban Mass Transportation Administration, Federal Railroad Administration, Federal Highway Administration, National Highway Traffic Safety Administration, and Coast Guard and the Maritime Administration; oversight of research and development in communications other than that for which the Subcommittee on Space Sciences and Applications is responsible.

(*f*) ***Subcommittee on Investigations and Oversight.*** Review and study, on a continuing basis, of the application, administration, execution, and effectiveness of those laws, or parts of laws, the subject matter of which is within the jurisdiction of the committee and the organization and operation of the Federal and private agencies and entities having responsibilities in or for the administration and execution thereof, in order to determine whether such laws and the programs thereunder are being implemented and carried out in accordance with the intent of the Congress. In addition, the Subcommittee on Investigations and Oversight and the appropriate subcommittee with legislative authority may cooperatively review and study any conditions or circumstances which indicate the necessity or desirability of enacting new or additional legislation within the jurisdiction of the committee, and may undertake futures research and forecasting on matters within the jurisdiction of the committee. The Subcommittee on Investigations and Oversight shall in no way limit the responsibility of other subcommittees from carrying out their oversight responsibilities, nor shall any investigation be undertaken by the Subcommittee on Investigations and Oversight without (a) consultation with the Chairman of the appropriate subcommittee with legislative authority and (b) approval of the Chairman of the committee.

(*g*) ***Subcommittee on Space Science and Applications.*** Legislation, general and special oversight and all other matters relating to the National Aeronautics and Space Administration (except aeronautical research and development); national programs of research and development in space exploration, space applications, space communications and related matters; and activities relating to a land observing system.

Referral of Legislation

27. All legislation and other matters referred to the committee shall be referred to all subcommittees of appropriate jurisdiction within two weeks unless, by a majority vote of the Majority Members of the full committee, consideration is to be by the full committee. Subcommittee chairmen may make requests for referral of specific matters to their subcommittee within the two-week period if they believe subcommittee jurisdictions so warrant.

Ex Officio Members

28. The Chairman and Ranking Minority Member shall serve as ex officio Members of all subcommittees and shall have the right to vote

and be counted as part of the quorum on all matters before the subcommittee.

Procedures

29. No subcommittee shall meet for markup or approval when any other subcommittee of the committee is meeting to consider any measure or matter for markup or approval.

30. Each subcommittee is authorized to meet, hold hearings, receive evidence, and report to the committee on all matters referred to it. Each subcommittee shall conduct legislative and general oversight, inquiries for the future and forecasting, and budget impact studies on matters within their respective jurisdictions. Subcommittee chairmen shall set meeting dates after consultation with the Chairman and other subcommittee chairmen with a view toward avoiding simultaneous scheduling of committee and subcommittee meetings or hearings wherever possible.

31. Any Member of the committee may have the privilege of sitting with any subcommittee during its hearings or deliberations and may participate in such hearings or deliberations, but no such Member who is not a member of the subcommittee shall vote on any matter before such subcommittee.

32. During any subcommittee proceeding for markup or approval, a roll call vote may be had at the request of one or more Members of that subcommittee.

Power to Sit and Act; Subpena Power

33. Rule XI 2(m) of the Rules of the House of Representatives is hereby incorporated by reference (power to sit and act; subpena power).

REPORTS

Substance of Legislative Reports

34. The report of the committee on a measure which has been approved by the committee shall include the following, to be provided by the committee:

(A) the oversight findings and recommendations required pursuant to clause 2(b)(1) of Rule X of the Rules of the House of Representatives, separately set out and identified, [Rule XI 2(l)(3)(A)];

(B) the statement required by section 308(a) of the Congressional Budget Act of 1974, separately set out and identified, if the measure provides new budget authority or new or increased tax expenditures, [Rule XI 2(l)(3)(B)];

(C) a detailed analytical statement as to whether the enactment of such bill or joint resolution into law may have an inflationary impact on the national economy, [Rule XI 2(l)(4)];

(D) with respect to each roll call vote on a motion to report such bill or resolution, the total number of votes cast for and the total number of votes cast against the reporting of such bill or resolution, [Rule XI 2(l)(2)(B)];

(E) the estimate and comparison prepared by the committee under Rule XIII 7(a) of the Rules of the House of Representatives, unless the estimate and comparison prepared by the Direc-

tor of the Congressional Budget Office prepared under subdivision (A) of Rule 34 has been timely submitted prior to the filing of the report and included in the report. [Rule XIII 7]; and

(F) in the case of a bill or joint resolution which repeals or amends any statute or part thereof, the text of the statute or part thereof which is proposed to be repealed, and a comparative print of that part of the bill or joint resolution making the amendment and of the statute or part thereof proposed to be amended. [Rule XIII 3].

35. (a) The report of the committee on a measure which has been approved by the committee shall further include the following, to be provided by sources other than the committee:

(A) the estimate and comparison prepared by the Director of the Congressional Budget Office required under section 403 of the Congressional Budget Act of 1974, separately set out and identified, whenever the Director (if timely submitted prior to the filing of the report) has submitted such estimate and comparison to the committee, [Rule XI 2(l)(3)(C)];

(B) a summary of the oversight findings and recommendations made by the Committee on Government Operations under Rule X 2(b)(2) of the Rules of the House of Representatives, separately set out and identified, [Rule XI 2(l)(3)(D)].

(b) Notwithstanding the foregoing sections of this rule, if the committee has not received prior to the filing of the report the material required under subdivisions (A) and (B) of this rule, then it shall include a statement to that effect in the report on the measure.

Minority and Additional Views

36. If, at the time of approval of any measure or matter by the committee, any Member of the committee gives notice of intention to file supplemental, minority, or additional views, that Member shall be entitled to not less than 3 calendar days (excluding Saturdays, Sundays, and legal holidays) in which to file such views, in writing and signed by that Member, with the clerk of the committee. All such views so filed by one or more Members of the committee shall be included within, and shall be a part of, the report filed by the committee with respect to that measure or matter. The report of the committee upon that measure or matter shall be printed in a single volume which shall include all supplemental, minority, or additional views which have been submitted by the time of the filing of the report, and shall bear upon its cover a recital that any such supplemental, minority, or additional views (and any material submitted under subdivisions (A) and (B) of Rule 34) are included as part of the report. However, this rule does not preclude (1) the immediate filing or printing of a committee report unless timely request for the opportunity to file supplemental, minority, or additional views has been made as provided by this subparagraph or (2) the filing by the committee of any supplemental report upon any measure or matter which may be required for the correction of any technical error in a previous report made by that committee upon that measure or matter.

37. The Chairman of the committee or subcommittee, as appropriate, shall advise Members of the day and hour when the time for submitting views relative to any given report elapses. No supplemental, minority or additional views shall be accepted for inclusion in the report if submitted after the announced time has elapsed unless the Chairman of the committee or subcommittee, as appropriate, decides to extend the time for submission of views beyond 3 days, in which case he shall communicate such fact to Members, including the revised day and hour for submissions to be received, without delay.

Consideration of Subcommittee Reports

38. Reports and recommendations of a subcommittee shall not be considered by the full committee until after the intervention of three calendar days, excluding Saturdays, Sundays and legal holidays, from the time the report is submitted and printed hearings thereon shall be made available, if feasible, to the Members, except that this rule may be waived at the discretion of the Chairman.

Timing and Filing of Committee Reports

39. It shall be the duty of the Chairman to report or cause to be reported promptly to the House any measure approved by the committee and to take or cause to be taken the necessary steps to bring the matter to a vote.

40. The report of the committee on a measure which has been approved by the committee shall be filed within seven calendar days (exclusive of days on which the House is not in session) after the day on which there has been filed with the clerk of the committee a written request, signed by a majority of the Members of the committee, for the reporting of that measure. Upon the filing of any such request, the clerk of the committee shall transmit immediately to the Chairman of the committee notice of the filing of that request.

41. Any committee or subcommittee report published by the committee shall follow the same procedures for its approval, including the opportunity to submit views, as is followed in the case of a report accompanying a bill or resolution which has been approved by the committee.

MEDIA COVERAGE

*42. The committee may permit, by majority vote, hearings or meetings which are open to the public to be covered in whole or in part by television, radio and still photography—or by any such methods of coverage—in accordance with Rule XI 3 of the Rules of the House of Representatives.

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*Indicates rules applicable to subcommittees.

LEGISLATIVE AND OVERSIGHT JURISDICTION OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY

"RULE X. ESTABLISHMENT AND JURISDICTION OF STANDING COMMITTEES

"The Committees and Their Jurisdiction.

"1. There shall be in the House the following standing committees, each of which shall have the jurisdiction and related functions assigned to it by this clause and clauses 2, 3, and 4; and all bills, resolutions, and other matters relating to subjects within the jurisdiction of any standing committee as listed in this clause shall (in accordance with and subject to clause 5) be referred to such committees, as follows:

* * * * * * *

"(r) Committee on Science and Technology.

"(1) Astronautical research and development, including resources, personnel, equipment, and facilities.

"(2) Bureau of Standards, standardization of weights and measures and the metric system.

"(3) National Aeronautics and Space Administration.

"(4) National Aeronautics and Space Council.

"(5) National Science Foundation.

"(6) Outer space, including exploration and control thereof.

"(7) Science scholarships.

"(8) Scientific research and development.

"(9) Civil aviation research and development.

"(10) Environmental research and development.

"(11) All energy research, development, and demonstration, and projects therefor, and all federally owned or operated nonmilitary energy laboratories.

"(12) National Weather Service.

"In addition to its legislative jurisdiction under the preceding provisions of this paragraph (and its general oversight function under clause 2(b)(1)), the committee shall have the special oversight functions provided for in clause 3(f) with respect to all nonmilitary research and development.

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"SPECIAL OVERSIGHT FUNCTIONS

"3. (f) The Committee on Science and Technology shall have the function of reviewing and studying, on a continuing basis, all laws, programs, and Government activities dealing with or involving nonmilitary research and development."

LEGISLATIVE AND OVERSIGHT JURISDICTION OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY

"RULE X. ESTABLISHMENT AND JURISDICTION OF STANDING COMMITTEES

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"(1) Astronautical research and development, including resources, personnel, equipment, and facilities.

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SPECIAL OVERSIGHT FUNCTIONS

"3. (f) The Committee on Science and Technology shall have the function of reviewing and studying, on a continuing basis, all laws, programs, and Government activities dealing with or involving nonmilitary research and development."

CHAPTER I—LEGISLATIVE ACTIVITIES OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY

During the 98th Congress, 128 bills were referred to the Committee on Science and Technology. The Committee reported 25 bills to the House, 17 passed the House, 11 were enacted into law, and 2 were vetoed by the President.

Three bills enacted contain titles or sections which were reported by or worked on by the Committee as matters of jurisdiction: H.R. 4043 (P.L. 98-462); H.R. 5003 (P.L. 98-620); and P.L. 98-623. In each case, the Committee was able to effectively legislate on matters of jurisdiction without the usual referral of the particular aspect of jurisdiction to the Committee.

1.1—Public Law 98-52, the National Aeronautics and Space Administration Act, 1984. (H.R. 2065, S. 1096)

To authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes.

Summary and background of legislation

The Committee on Science and Technology is responsible for annual authorizations for the National Aeronautics and Space Administration programs. This jurisdiction is shared by two Subcommittees: Space Science Applications for space programs; and Transportation, Aviation, and Materials, for aeronautical research and technology.

Public Law 98-52 authorizes $7,267,600,000 to be appropriated to the National Aeronautics and Space Administration for FY 1984. The authorization included $5,883,000,000 for research and development programs under the following new items: Space transportation capability development; Space transportation operations; Physics and astronomy; Planetary exploration; Life sciences; Space applications; Technology utilization; Aeronautical research and technology; Space research and technology; and Tracking and data systems. The authorization bill included $142,100,000 for Construction of Facilities. For Research and Program Management, the bill authorizes $1,242,500,000 and such additional amounts as may be necessary for increses in salary, pay, retirement, or other employee benefits authorized by law.

Aeronautics.—The objectives of the aeronautics programs are: to advance aeronautical technology to insure safer, more economical, efficient, and environmentally acceptable air transporation systems which are responsive to current and projected national needs; to support the Department of Defense in maintinaing the superiority of the Nation's military aircraft; and to maintain the strong com-

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petitive position of the United States in the international aviation marketplace.

For Fiscal Year 1984, NASA requested $300,300,000 for Aeronautical Research and Technology. This amount represented an increase of 7.2 percent over the fiscal year 1983 appropriation.

The Committee felt that the aggregate amount requested by NASA was responsive to the thrust of the Administration's policy statement on aeronautical R&T, while at the same time recognizing the need for overall fiscal restraint. Upon close examination, however, the request showed clear evidence of further withdrawal from certain important technology validation activities with civil application that the Congress strongly supported in the past.

The Committee was also concerned with maintaining a proper balance between in-house and contracted work and between applied research and technology validation. It was felt, in both instances, the program should contain a meaningful component of both contracted work and technology validation activities to maximize the transfer of research results into useful applications. The proposed fiscal year 1984 program had moved away from balance in that regard.

Therefore, the Committee directed the following restorations to civil systems technology programs: $8.7 million for the Advanced Turboprop Program to begin activities leading to a flight test, not later than 1987, and $14.0 million to be applied to NASA's discretion to upgrade the Advanced Transport Operating Systems, completion of the presently defined Laminar Flow Control Program, continuation of the Small Engine Component Technology Program, and start of the Advanced Turboprop Research Program. To offset these restorations, the Committee further directed a general reduction in the R&T base of $22.7 million.

The Committee strongly favored proceeding as rapidly as possible with development of the Numerical Aerodynamic Simulator with the full funding as proposed by the Administration. The Committee also applauded NASA's new initiative in the composite materials area, but urged expansion of that program to include fundamental work on advanced metals. The total authorization was $300,300,000.

Title II of Public Law 98-52 authorized to be appropriated $29,336,000 for FY 1984 for the operation of the land remote-sensing satellite system, including provision for storage of a backup satellite. This title also set the stage for consideration of the transfer of civil land remote-sensing satellites to private-sector operation. The bill directed that the Secretary of Commerce would consider the transfer of ownership or management of any civil land, meteorological, or ocean remote sensing space satellite system and associated ground system equipment only after Congress has been fully notified in a comprehensive written statement of recommended policies, procedures, conditions, and limitations to which such a transfer should be subject. Further, no transfer of such satellite systems would take place prior to enactment of legislation which provides any guidelines, policies, procedures, conditions or limitations as Congress deems appropriate for any such transfer.

Legislative history

H.R. 2065 began as an Administrative proposal (Executive Communication 450). It was introduced March 11, 1983, by Mr. Fugua.

H.R. 2065 supersedes H.R. 1954, which was introduced on March 7, 1983, and referred jointly to the Subcommittee on Space Science and Applications and the Subcommittee on Transportation, Aviation and Materials on March 8, 1983. The Transportation, Aviation and Materials Subcommittee had conducted an oversight hearing the previous December to review aeronautical research. The Subcommittee on Transportation, Aviation and Materials and the Subcommittee on Space Science and Applications both met on March 10, 1984, to mark up the bill H.R. 1954, and each Subcommittee ordered a clean bill to be introduced.

Prior to introduction of the NASA Authorization legislation, the Full Committee met to conduct a posture hearing, at which the Administrator of NASA presented testimony in support of the proposed NASA budget. Hearings were held by the Subcommittee on Space Science and Applications on February 8, 10, 22, 23, 24, and March 1, 2, and 3, 1983. In addition, the Subcommittee on Space Science and Applications conducted field hearings on February 25 (Johnson Space Center), February 26 (Michoud Assembly Facility), and February 28, 1983 (Marshall Space Flight Center). Hearings are printed in Committee on Science and Technology documents, Numbers 3 and 17.

On March 11, 1983, the clean bill, H.R. 2065, was introduced by Mr. Fuqua. The Full Committee met to mark up the bill on April 12, and on that date the Committee ordered the bill reported as amended. On April 15, the Committee report was filed in the House as H. Rept. 98-65). A Committee on Rules hearing took place on April 20, at which a one-hour, open rule was granted.

H.R. 2065 was considered by the House on April 26, 1983. The House agreed to the committee amendments and the bill was passed by voice vote. In the Senate, H.R. 2065 was referred to the Senate Committee on Commerce, Science, and Transportation on April 27, 1983.

The Senate Committee on Commerce, Science and Transportation approved the bill for reporting, with an amendment in the nature of a substitute, on June 27, 1983. Also on June 27, the bill was placed on the Senate Legislative Calendar. The Senate passed the bill on June 28, after agreeing to the Committee amendment in the nature of a substitute. House concurrence was requested on June 28. On June 29, the House agreed to the Senate amendment.

H.R. 2065 was signed by the President on July 15, 1983, becoming Public Law 98-52.

Committee Publication Number 98-3.

1.2—Public Law 98-241, the Earthquake Hazards Reduction Act of 1977, and the Federal Fire Prevention and Control Act of 1974. (H.R. 2465)

To authorize appropriatons for The Earthquake Hazards Reduction Act of 1977 and The Federal Fire Prevention and Control Act of 1974 for fiscal year 1984 and fiscal year 1985, and for other purposes.

Summary and background of legislation

Public Law 98–241 authorizes in Title I a total of $65.6 million for the earthquake hazards reduction program in fiscal year 1984 and $72.6 million in fiscal year 1985. In Title II, a total of $15.7 million is authorized for the fire prevention and control program in fiscal year 1984 and $21 million in fiscal year 1985. Title I authorizes funds for the National Science Foundation and the U.S. Geological Survey for theoretical, laboratory and field research on earthquake prediction and hazard mitigation. Also, the Act reinstates the seismic codes and standards effort at the Center for Building Technology (CBT), National Bureau of Standards and authorizes funds for FEMA's lead responsibilities in the National Earthquake Program.

In Title II, the Act authorizes funds to enhance fire prevention education and technology development programs at the U.S. Fire Administration.

Legislative history

The Subcommittee on Science, Research and Technology held a hearing on the Earthquake Hazards Reduction Act on March 15, 1983, with witnesses from academia, and the government at the local, state and federal levels. On March 16, 1983, the Subcommittee held a hearing on the Federal Fire Prevention and Control Act. Witnesses from several fire service organizations, academia, local government and Federal Government appeared at the hearing.

On April 5, 1983, Mr. Walgren introduced the Administration's recommendations for authorization of appropriations for the Earthquake Act (H.R. 2415) and the Fire Act (H.R. 2414).

The Subcommittee met on April 7, 1983 and, in lieu of considering H.R. 2414 and H.R. 2415, considered the Chairman's recommendations. The recommendations incorporated authorization of the Earthquake and Fire Acts into one bill. The Subcommittee ordered the recommendations reported without amendment, and ordered a clean bill reported and introduced.

A clean bill (H.R. 2465) was introduced by Mr. Walgren (for himself, Mr. Fuqua, Mr. Brown of California, Mr. Dymally, Mr. Torricelli and Mr. Boehlert) on April 11, 1983. H.R. 2465 was referred jointly to the Committees on Science and Technology and Interior and Insular Affairs.

On April 19, 1983, by voice vote, H.R. 2465 was ordered reported without amendment by the Committee on Science and Technology.

On May 16, 1983 the report was filed in the House (H. Report 98–99, Part 2).

The House Committee on Interior and Insular Affairs reported H.R. 2465 without amendment on May 4, 1983. (H. Report 98–99, Part 1 and 3).

The Senate Committee on Commerce, Science and Transportation reported comparable bills, S. 820, the Earthquake Act authorization bill for fiscal year 1984 and S. 809, the Federal Fire Act authorization bill for fiscal year 1984, on March 22, 1983. Subsequently, the bills were passed on the Senate floor, April 7, 1983.

On January 25, 1984, an open rule with one hour of debate was granted by the Rules Committee and the bill was considered on the

House floor on February 1, 1984. In Title I H.R. 2465 was amended to increase the earthquake program by $2.2 million to make FY 1985 levels equal to Administration proposals. Also, in Title II, the fire program was increased by $2.4 million to make FY 1985 levels equal to Administration proposals.

The FY 1984 funding levels in H.R. 2465 were amended and reduced by a total of $3.5 million, to equal the previously enacted appropriations levels. The authorization levels for the NSF earthquake program were reduced by $1.5 million to a level of $25.8 million. The authorization for the fire programs at the USFA was reduced by $2 million to a level of $15.72 million. An amendment was accepted to transfer to FEMA from the Secretary of Defense the authority to grant the public safety officer award to an outstanding civilian defense office. The House accepted an amendment expressing the sense of the Congress that special recognition should be made of volunteer fire companies for their contribution to public safety.

Subsequently, passage was then vacated and S. 820 passed after striking all after the enacting clause and substituting the provisions of the House passed H.R. 2465. On March 8, 1984 the Senate concurred in the House amendments to S. 820, clearing the measure for the President. P.L. 98-241 was signed by the President on March 22, 1984.

Committee Publication Number 98-8.

1.3—Public Law 98-284, the Critical Agricultural Materials Act. (H.R. 2733)

To extend and improve the existing program of research, development, and demonstration in the production and manufacture of guayule rubber, and to broaden the program to include other critical agricultural materials.

Summary and background of legislation

Public Law 98-284 renews for five years the research and development work on native latex authorized by P.L. 95-592 and authorizes a total of $50 million over five years to be divided between the Department of Agriculture and the Department of Commerce. The Act expands the membership of the Joint Commission that coordinates activities in this area to include the Department of Defense, the Department of State, and the Federal Emergency Management Agency. The Department of Agriculture is designated as the lead agency, as well as the Chairman of the Joint Commission. The bill also establishes the Office of Critical Agricultural Materials in USDA that will serve as the coordinator of the Department's research activities on native latex and research on other agricultural crops that could bear strategic and industrial materials. The Act calls for the acceleration of genetic research, large-scale plantings, and development of pilot and commercial size extraction facilities for native latex from Guayule with the goal of having a mature product for the marketplace in five years. At that point, the Federal involvement in native latex will cease. Further, the Act expands the scope of the original Native Latex Commercialization Act to in-

clude research on other agricultural crops that could bear materials of strategic and industrial importance.

Legislative history

H.R. 2733 was introduced on April 26, 1983 and was jointly referred to the Committee on Agriculture and the Committee on Science and Technology. Joint hearings were held on March 24, 1983 before the Subcommittee on Department Operations, Research, and Foreign Agriculture of the Agriculture Committee and the Subcommittee on Science, Research and Technology of the Sciences and Technology Committee. The hearing focused on current and past research and development work on native latex, as well as the possible need to reauthorize work performed under P.L. 95-592. Witnesses representing various Federal agencies involved in guayule rubber research and development and academic and private industry testified at the hearing.

On May 5, 1983 the Sucommittee on Science, Research and Technology reported H.R. 2733 after accepting a series of amendments and forwarded the bill to the full Committee on Science and Technology for its consideration. On May 10, the Committee on Science and Technology ordered H.R. 2733 reported, as amended (Committee Rept. 98-109 Part 2).

On April 27, 1983 the Subcommittee on Department Operations, Research and Foreign Agriculture approved H.R. 2733, after accepting a series of technical amendments. As a result of these actions, the versions of H.R. 2733 approved by the Committee on Science and Technology and the Committee on Agriculture were identical. On May 17 the bill passed the House under suspension of the Rules by a vote of 326-96.

In the Senate, a similar version of H.R. 2733 was reported by the Agriculture Committee on June 23, 1983 and placed on the Senate calender. On May 1, 1984 this bill passed the Senate without amendment by voice vote.

On May 16, 1984 this legislation was signed by the President and became P.L. 98-284.

Committee Publication Number 98-97.

1.4—Public Law 98-361, the National Aeronautics and Space Administration Authorization Act, 1985. (H.R. 4797, H.R. 5154)

To authorize appropriations to the National Aeronautics and Space Administration for research and development, space flight, control and data communications, construction of facilities, and research and program management, and for other purposes.

Summary and background of legislation

The Committee on Science and Technology is responsible for authorizing annually the National Aeronautics and Space Administration's budget. Two Subcommittees share this jurisdiction: Space Science and Applications, for all portions of the NASA budget with the exception of Aeronautical research and technology; and Transportation, Aviation and Materials, for the Aeronautical research and technology portion of the NASA budget.

Title I of Public Law 98-361 authorizes $7,526,400,000 to be appropriated to the National Aeronautics and Space Administration for fiscal year 1985. The authorization includes $2,475,100,000 for research and development programs under the following ten line items: Space transportation capability development; space station; physics and astronomy; life sciences; planetary exploration; space applications; technology utilization; aeronautical research and technology; space research and technology; space transportation and data advanced systems. The Authorization includes $3,585,300,000 for Space flight, control and data communications, under three line items: Space shuttle production and operational capability; Space transportation operations; and Space and ground network, communications and data systems. Of the amount authorized to Communications, $40 million is authorized only for the Advanced Communications Technology Satellite (ACTS) flight program which is designed to lead to a launch of such satellite no later than 1989. The Authorization includes funding for Construction of Facilities of $150,000,000, for construction, modifications, and repairs, to facilities at various locations. The Authorization includes for Research and Program Management $1,316,000,000 and such additional funds as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law; $1,000,000 of this amount shall be available for the activities of the National Commission on Space, established under Title II of this Act.

Aeronautics.—For fiscal year 1985, NASA requested $342,400,000 for Aeronautical Research and Technology. This amount represented an increase of 13.3 percent over the Fiscal Year 1984 appropriation.

While this increase reflected substantial real growth from the previous year, the Committee noted that the long-term trend had not been adequate to keep pace with inflation, much less with the increasing sophistication of aeronautics.

The Committee noted that the Administration had failed to request funds to carry out Congressional intent in validating the Prop Fan technology. Thus, the Committee recommended that within the total authorization for Aeronautical R&T, $24.0 million be authorized only for activities in the Advanced Turboprop program leading to a flight test no later than 1987 and for supporting research and technology. This amount consisted of $14.0 million contained in the request under the Advanced Propulsion Systems Technology line item plus an augmentation of $10.0 million.

The request contained $2.1 million for research on alternative fuels for general aviation, and the Committee increased the amount by $1.0 million to stress the importance of this work to the future of air transportation.

To partially offset these increases, the Committee recommended a general reduction of $6.0 million from the R&T base. Under Construction of Facilities, the Committee recommended a further offsetting reduction to keep the total authorization for aeronautics at the level proposed by the Administration. The total authorization for Aeronautical R&T was $347.4 million.

Title II of Public Law 98-361 provides for the establishment of a National Commission on Space that would assist the United States (1) to define the long-range needs of the Nation that may be ful-

filled through the peaceful uses of outer space, (2) to maintain the Nation's preeminence in space science, technology, and applications, (3) to promote the peaceful exploration and utilization of the space environment, and (4) to articulate goals and develop options for the future direction of the Nation's civilian space program. The inclusion of Title II in the FY85 NASA authorization bill in part responds to the Committee's concern that the U.S. faces increasing competition from international participants in the space arena, and awareness that the private sector is playing an ever greater role in space. Noting the lack of a consistent long-term set of goals from the executive branch of the government, as well as the fact that Federal agencies and countless private firms participate in space activities, the Committee cited the need for a multi-representative forum to help focus and set a framework for future space activities. In the face of the Nation's commitment to a permanently manned space station, the Committee also felt the Commission's work would help look beyond the space station to future national efforts that would benefit from the presence of such a station. The legislation instructs the President to establish the Commission, with a one-year lifetime, to be composed of 15 members appointed by the President. Federal agency and Congressional representation, in an ex-officio capacity, is also provided. The Commission is charged with the duty of preparing a long-range plan for U.S. civilian space activity. The Commission will identify long-range goals, opportunities, and policy options for the next twenty years, and formulate an agenda for the U.S. civilian space program.

Legislative history

H.R. 4797 began as an Administration Proposal (Executive Communications Nos. 2599 and 2610), and it was introduced February 8, 1984, by Mr. Fuqua by request. The bill was jointly referred to the Subcommittee on Space Science and Applications and the Subcommittee on Transportation, Aviation and Materials.

The Subcommittee on Transportation, Aviation and Materials had conducted an oversight hearing the previous December on the future of aeronautics. The Subcommittee on Space Science and Applications conducted hearings on February 1, 2, 7, 8, and 9, 1984. On February 9, 1984, the Subcommittee on Transportation, Aviation, and Materials conducted a hearing.

The Subcommittee on Space Science and Applications conducted further hearings on H.R. 4797 on February 22, 23, 28, and 29 1984. On March 1, the two subcommittees of referral conducted a joint hearing.

The Subcommittee on Transportation, Aviation and Materials met to mark up H.R. 4797 on March 13, 1984, and on that date ordered a clean bill to be introduced.

The Subcommittee on Space Science and Applications also met on March 13, 1984, to mark up H.R. 4797, and ordered a clean bill to be introduced.

A clean bill, H.R. 5154, was introduced on March 15, 1984, by Mr. Fuqua. The bill was retained in Full Committee.

On March 29, 1984, the Full Committee met to mark up the clean bill, and ordered the bill reported with amendments by a recorded vote of 31 ayes to 7 nays.

The Committee report (H.Rpt. 98–629) was filed in the House on March 21, 1984. On March 22, a request was made to the Committee on Rules for a hearing. The Committee on Rules conducted a hearing on March 27, 1984, and a rule was granted (one hour, open).

The bill was approved by the House, amended, by a yea-nay vote of 389 yeas to 11 nays, on March 28, 1984. The bill was sent to the Senate and on March 30 was referred to the Senate Committee on Commerce, Science and Transportation.

The Senate Committee on Commerce, Science and Transportation ordered H.R. 5154, in lieu of S. 1612, reported with an amendment in the nature of a substitute on May 8, 1984.

On May 17, 1984, the Committee on Commerce, Science and Transportation filed S. Rpt. 98–455 in the Senate. On June 21, 1984, H.R. 5154 passed the Senate with an amendment in the nature of a substitute. The Senate insisted on its amendment, requested a conference with the House, and appointed as conferees Senators Packwood, Gorton, Goldwater, Lautenberg, and Heflin.

On June 26, 1984, the House disagreed to the Senate amendment in the nature of a substitute to H.R. 5154 and agreed to a conference. The House appointed as conferees Representatives Fuqua, Glickman, Volkmer, Nelson of Florida, Andrews of Texas, Winn, Lujan, And Carney. Additional conferees, Representatives Brown and Walker, were appointed solely for consideration of Section III of the House bill and modifications committee on conference.

The conferees met on June 27, and the conference report, H.Rpt. 98–873, was filed in the House on that date. On the same day, the Senate agreed to the conference report. On June 28, the House agreed to the conference report by a yea-nay vote of 298 yeas to 119 nays, clearing the measure for signature by the President.

On July 16, 1984, the bill was signed by the President, becoming Public Law 98–361.

Committee Publication Number 98–84.

1.5—Public Law 98–365, the Land Remote-Sensing Commercialization Act of 1984. (H.R. 4836, H.R. 5155, S. 2292)

To establish a system to promote the use of land remote-sensing satellite data, and for other purposes.

Summary and background of legislation

The Committee has held many hearings on the general subject of land remote sensing over the past several Congresses. Historically, land remote sensing has enjoyed strong support in the Congress, but there has been a lack of consensus on the appropirate institutional arrangement for an operational system on the role of the Federal Government, and on the best means of encouraging the increased participation of the private sector.

In 1983, hearings became more focused as a result of specific Administration actions (i.e., solicitation of bids) pursuant to a decision to commercialize land and weather satellites made by the President on March 8, 1983. Although the Congress ultimately prohibited transfer of weather satellites to the private sector, the question of commercialization of land remote sensing remained. In fact, the

need for a rapid policy resolution was highlighted by the grandual and premature failure of Landsat 4 during 1983, and by the early launch of Landsat 5, the last of the Landsat series, in 1984—events which dictated that a follow-on system of some kind would be needed sooner than expected.

From its inception, the Landsat technology was intended to be commercialized, because the majority of its uses serve commercial interests. The Committee has over the years supported commercialization of space technology whenever such commercialization is appropriate. In the case of land remote sensing, the Committee's view has been that a market-driven system will result in more efficient technology and hardware, expanded markets, and a broader scope of benefits for all.

A number of issues needed to be addressed legislatively, however, before commercialization of land remote-sensing could proceed. These issues included: program continuity; foreign competition; national security; international obligations and policy; research and development; remote sensing as a "public good"; the government's role in assisting commercialization; and government oversight mechanisms.

The purposes of H.R. 5155, the "Land Remote-Sensing Commercialization Act of 1984", were: (1) to provide for the phased commercialization of land remote sensing; (2) to ensure the continuity and availability of land remote-sensing data; (3) to establish a clear framework of national security and international policy requirements within which private remote-sensing space systems should operate; (4) to promote a unified research and development program which would maintain the United States' leadership in remote sensing; (5) to provide for the archiving of a basic set of land remote-sensing data that would serve the public interest for global environmental monitoring; (6) to delineate the authorities and responsibilities of the Federal Government in overseeing private sector remote sensing systems; (7) to designate the Department of Commerce as the lead agency for transferring space remote sensing to the private sector, for promulgating and enforcing needed regulations, and for licensing of private sector operators; and (8) to prohibit the commercialization of meteorological satellites.

Legislative history

H.R. 4836, a bill to establish a system to promote the use of land remote-sensing satellite data, and for other purposes, was introduced by Mr. Fuqua on February 9, 1984. On February 13, comments were requested from the Departments of Agriculture, Commerce, Defense, Interior, State, and Justice, as well as the National Aeronautics and Space Administration. The bill was jointly referred to the Subcommittee on Natural Resources, Agriculture Research and Environment and to the Subcommittee on Space Science and Applications on February 16.

The two subcommittees conducted a joint hearing on March 6, 1984, to review the proposed language. The Subcommittee on Space Science and Applications, on March 13, conducted a markup and ordered a clean bill to be introduced. The Subcommittee on Natural Resources, Agriculture Research and Environment met to mark

up the legislation on March 15, and on that date also ordered a clean bill to be introduced.

The clean bill, H.R. 5155, a bill to establish a system to promote the use of land remote-sensing satellite data, and for other purposes, was introduced by Mr. Fuqua on March 15, 1984, superseding H.R. 4836.

The full Committee on Science and Technology met on March 27, 1984, to mark up the legislation and ordered the bill reported without amendments. A Committee Report on the bill, H. Rept. 98-647, was filed in the House on April 3, 1984.

H.R. 5155 passed the House on April 9, 1984 under Suspension of the Rules. On April 10, the bill was referred to the Senate Committee on Commerce, Science and Transportation. On May 8, 1984, that Committee ordered H.R. 5155 reported with an amendment in the nature of a substitute, in lieu of S. 2292. On May 17, 1984, the Senate Committee on Commerce, Science and Transportation filed S. Rept. 98-458 to accompany H.R. 5155.

The Senate passed H.R. 5155 with an amendment in the nature of a substitute on June 8, 1984. Subsequently, on June 28, the House agreed to return the measure to the Senate with an amendment to the Senate amendment. On June 29, the Senate concurred in the House amendment to the Senate amendment.

The measure was signed by the President on July 17, 1984, becoming Public Law 98-365.

Committee Publication Numbers 53 and 74.

1.6—Public Law 98-373, the Arctic Research and Policy Act of 1984. (S. 373, H.R. 2292, H.R. 4186)

To provide for a comprehensive national policy dealing with national research needs and objectives in the Arctic, for a National Critical Materials Council, for development of a continuing and comprehensive national materials policy, for programs necessary to carry out that policy, including Federal programs of advanced materials research and technology, and for innovation in basic materials, and for other purposes.

Summary and background of legislation

Title I of Public Law 98-373 provides for formulation of a coordinated national policy for Arctic research and coordination of Fedeal Arctic research programs with each other and with national policy. The need for such policy had been brought to the attention of Congress over a number of years, pointed up by the fact that the more than $100 million spent annually by the U.S. on research in the Arctic region is spread over more than a dozen Federal agencies, a state government, and the private sector with little or no coordination. In the 97th Congress the Senate passed legislation to address this need, but the House did not act.

Title I establishes a five-member, Presidentially appointed Arctic Research Commission to develop and recommend an integrated national Arctic research policy, and to assist the Interagency Arctic Research Policy Committee, also set up under Title I, in establishing a program plan to implement the policy.

The Interagency Arctic Research Policy Committee is composed of representatives of each Federal Agency or office involved with Arctic research. The National Science Foundation (NSF) is designated the lead agency responsible for implementing Arctic research policy, and the NSF representative on the Interagency Committee shall serve as its chairperson.

The Interagency Committee will survey Arctic research conducted by Federal, State and local agencies, universities, and other public and private institutions to help determine priorities for future Arctic research. The Committee will, in consultation with the Commission, the Governor of Alaska, the residents of the Arctic, the private sector, and public interest groups, prepare a comprehensive 5-year program plan for the overall Federal effort in Arctic research.

The Office of Management and Budget (OMB) will be required to consider all Federal agency requests for research related to the Arctic as one integrated, coherent, and multiagency request which OMB will review and indicate the budget request's adherence to the program plan.

The Commission may appoint and fix the compensation of an Executive Director and up to seven staff. There are authorized such sums as may be necessary to carry out this title.

Title II provides for establishing a three-member National Critical Materials Council under the Executive Office of the President. The Council will be responsible for advising the President and making recommendations to the Congress regarding national materials policy and programs or activities to implement those policies. The Council will help in assigning responsibilities and coordinating Federal materials-related policies, programs, and research activities as well as making budget recommendations to OMB. The Council will also review and assess the various programs and activities of the government in accordance with the direction and policy of the National Materials and Minerals Policy, Research and Development Act of 1980 (P.L. 96-479).

The Council will oversee Federal materials R&D policies and programs and, in particiular, establish a national Federal program plan for advanced materials research and development. OMB will be required to consider materials research, development and technology funding requests as a single, multi-agency request in each fiscal year and indicate its adherence to the materials program plan.

The Council is required to evaluate and make recommendations for the establishment of Centers for Industrial Technology in generic materials areas. The Council, in order to promote better innovation of materials for safety and efficiency, will also establish a computerized materials property data management and analysis system.

The bill also creates the position of Executive Director and up to twelve staff positions to provide the administrative and professional support for the Council. One million dollars is authorized for the first year and such sums as necessary thereafter.

Legislative history

Title I of the Arctic Research and Policy Act of 1984 was initiated in the Senate (S. 1562) on July 31, 1981 by Senator Murkowski. The bill was referred to the Committee on Governmental Affairs, which reported S. 1562 on October 18, 1982. The Senate passed the bill on December 10, 1982 and it was referred to the House Committee on Science and Technology where no action was taken.

Senator Murkowski reintroduced the bill as S. 373 on February 1, 1983. After action by the Committee on Governmental Affairs (S. Rept. 98-159), S. 373 passed the Senate on June 27, 1983, and was referred to the House Science and Technology Committee on June 29, 1983.

In the House, on March 23, 1983 Congressman Don Young introduced H.R. 2292, technically identical to S. 373. H.R. 2292 was referred to the Committee on Science and Technology, where hearings were held on June 28, 1983 by the Subcommittee on Science, Research and Technology (Publication No. 98-56). On October 28, 1983 the Subcommittee amended S. 373 and reported it to the full Science and Technology Committee. There it was ordered reported, as amended, and after being further amended to include Title II, the National Critical Materials Act of 1984.

Title II of S. 373, the National Critical Materials Act of 1984, originated from H.R. 4186, which was introduced October 20, 1983 and referred to the Subcommittee on Transportation, Aviation and Materials on October 24, 1983. The Subcommittee on Transportation, Aviation and Materials held oversight hearings on materials research and development policy on May 17-19 and June 14, 1983. On October 27, 1983, the Subcommittee ordered the bill reported to the Full Committee without amendments. On November 10, 1983, the Full Committee incorporated the bill, as amended, into S. 373 as Title II.

On January 31, 1984, the Committee on Science and Technology filed House Rept. 98-593, Pt. 1, on S. 373, as amended. The Merchant Marine and Fisheries Committee was granted sequential referral, and filed House Rept. 98-593, Pt. 2, on March 16, 1984, after amending Title I of S. 373. The Armed Services Committee, to which S. 373 had also been sequentially referred, discharged the bill on March 16, 1984. S. 373 passed the House as amended, on April 24, 1984. The Senate concurred in the House amendments, with amendments, on June 26, 1984; the House agreed to the Senate amendments to the House amendments; the bill was signed into law July 31, 1984.

Committee Publication Number 98-56.

1.7—Public Law 98-377, the Education for Economic Security Act. (H.R. 1310, S. 1285)

To provide assistance to improve elementary, secondary, and postsecondary education in mathematics and science; to provide a national policy for engineering, technical, and scientific personnel; to provide cost sharing by the private sector in training such personnel; to encourage creation of new engineering, technical, and scientific jobs; and other purposes.

Summary and background of legislation

Public Law 98–377 contains eight titles authorizing programs ranging in scope from precollege curriculum improvement to college and university faculty exchange programs. Title I provides funds to the National Science Foundation for teacher institutes, improvement of instructional programs and materials in mathematics and science, and Congressional Merit Scholarships. Title II provides funds for State and local education agencies to improve the skills of teachers and instruction in mathematics, science, computer learning, and foreign languages. Title III provides funds for the Federal portion of a cost-sharing program with public and private agencies for the improvement of instruction in mathematics, science, and engineering. Title IV authorizes the President to make Presidential Awards for Teaching and Excellence in Mathematics and Science to 100 secondary school teachers. Title V authorizes the Environmental Protection Agency to establish a program to assist States and local school districts in identifying and abating asbestos hazards in schools. Title VI provides support for local school districts to carry out programs that encourage excellence in selected schools. Title VII provides funding for local school districts to establish and operate magnet schools. Title VIII would make it unlawful for any school district receiving Federal support to deny equal access and opportunity to any student meetings on the basis of the religious, political or philosophical content of the speech at such meetings. P.L. 98–377 authorizes funding for these programs for fiscal years 1984 and 1985. The total authorized funding is $475 million for FY 1984 and $681 million for FY 1985.

During the past several years the Committee on Science and Technology has been made increasingly aware of problems in the nation's ability to provide trained and technically skilled personnel necessary to our continued national economic strength and vitality. Specific areas of concern include: a decrease of engineering faculty with a concurrent increase in engineering enrollment; a decline in the quality and quantity of new graduate engineers and researchers; a decline in the number of science and mathematics teachers at the precollege level; a long-term decline in precollege scientific literacy and an increased need for skilled technicians in various high technology fields. These problems have been identified in various hearings before the Committee, in national studies and conferences, and individual communications to the Committee. The legislative actions taken by the Committee on Science and Technology in the field of science and mathematics education are in response to these problems.

Legislative history

The House version of H.R. 1310 is a fusion of H.R. 30 and H.R. 582. H.R. 1310 was jointly referred to the Committee on Science and Technology and the Committee on Education and Labor. After holding hearings the Committee on Education and Labor met on February 8, 1983 for the purpose of marking up the bill. After discussion, the Committee ordered the bill, as amended, favorably reported to the House by a vote of 27–3 (House Rept. 98–6 Part 1). The Committee on Science and Technology held two days of hear-

ings on H.R. 1310. The first hearing was held on February 9, 1983 with Hon. Carl Perkins, Chairman of the Education and Labor Committee, and Hon. Paul Simon, Chairman of the Subcommittee on Postsecondary Education included among the witnesses. On February 16, 1983 the Committee conducted a hearing in which Members of Congress and representatives from state education agencies, community colleges, four year colleges, graduate institutions, professional societies, and private industry presented testimony. On February 22, 1983 the Committee on Science and Technology met for the purpose of marking up the bill. The Committee voted unanimously to report H.R. 1310, as amended, to the full House (House Rept. 98-6 Part 2). On March 2, 1983 the House passed H.R. 1310, as amended, by a vote of 348-54 (Record vote No. 14).

In the Senate, H.R. 1310 was referred to the Senate Committee on Labor and Human Resources. On June 27, 1984 the Senate passed H.R. 1310 by striking all after the enacting clause and inserting in lieu thereof the contents of S. 1285, as amended. On July 25, 1984 the House agreed to the Senate version of H.R. 1310 by votes of 337-77 on Title VIII and 393-15 on Titles I through VII. On August 11, 1984 the President signed the legislation into law.

Committee Publication Number 98-99.

1.8—Public Law 98-462, The National Cooperative Research Act of 1984. (S. 1841, H.R. 5041, H.R. 4043, H.R. 3393, H.R. 1952)

To modify the Federal antitrust laws to encourage the formation of research and development joint ventures.

Summary and background of legislation

Public Law 98-462 creates a relatively straightforward method for legitimate American joint ventures to do the research necessary to compete in the world market. Although not many joint R&D antitrust cases have been brought over the years, the ambiguities of prior law have led many cautious corporate counsels to advise their companies not to enter these arrangements.

The law sets up a system where joint venturers on research projects can limit potential legal liability for violation of antitrust laws to actual damages incurred by an injured party. The limitation on liability takes place within 30 days of notification of the Justice Department and the Federal Trade Commission of their venture's membership and area of intended research. It also allows joint venturers using that system to be reimbursed for their costs in defending themselves in frivolous lawsuits brought against them under the antitrust laws. Before this legislation became law, such defendants were liable for triple damages if they lost an antitrust lawsuit, and under no circumstances could they recover the costs of defending themselves.

Legislative history

H.R. 4043 was introduced on September 30, 1983, by Congressman Fuqua and 11 other Members of Congress. The bill, as introduced, represents a consolidation of two earlier bills, H.R. 1952 and H.R. 3393. H.R. 1952 was introduced by Congressmen Synar, Gephardt, Wyden and Zschau and H.R. 3393 was introduced by Con-

gressman Sensenbrenner and Congresswoman Lloyd. The cosponsors of H.R. 1952 and H.R. 3393 are all co-sponsors of H.R. 4043. All three of these bills were referred jointly to the Committee on the Judiciary and the Committee on Science and Technology.

On June 29 and 30, 1983, the Subcommittee on Science, Research and Technology and Investigations and Oversight held joint hearings on the subject of Japanese Technological Advances and Possible U.S. Responses Using Research Joint Ventures. These hearings were held to address the general topic area of research and development joint ventures as well as legislative remedies that might be appropriate to further encourage the formation of these ventures. In addition, the Subcommittee on Science, Research and Technology held a legislative hearing on H.R. 1952 and H.R. 3393 on July 12, 1983. The above three days of hearings involved 24 witnesses representing the Administration, the academic community and the private sector including large and small business and representatives from two ongoing research and development joint ventures.

On October 4, 6, and 26, the Subcommittee on Science, Research and Technology held markup sessions on H.R. 4043 and on October 26, 1983, a quorum being present, ordered H.R. 4043 favorably reported by voice vote to the Full Committee with amendments. On November 2 and 3, 1983, the Committee on Science and Technology held markup sessions on H.R. 4043 and on November 3, 1983, a quorum being present, adopted H.R. 4043, as amended, by a recorded vote of 41 yeas to 0 nays and, by unanimous voice vote, ordered the amended bill favorably reported to the House.

The Committee on Science and Technology in November 1983 reported H.R. 4043, the Research and Development Joint Venture Act of 1983 (H.Rept. 98-571, Part 1). The Committee on the Judiciary used H.R. 4043 as the starting point in drafting the Joint Research and Development Act of 1984, H.R. 5041, which it reported April 6, 1984. The two Committees negotiated out differences, and on May 1, both Committees supported a compromise version of H.R. 5041 during consideration by the full House of Representatives.

The Senate substituted its own bill S. 1841, the National Productivity and Innovation Act, for the House-passed bill which passed the Senate unanimously on July 31, 1984. The House and the Senate Conferees, including Representatives Fuqua and Gregg of the Committee on Science and Technology, met for two months negotiating the differences between the two bills and emerged with a compromise version of S. 1841 which they titled the "National Cooperative Research Act of 1984". The compromise version passed the Senate on September 26, 1984 and the House on October 1, 1984.

President Reagan signed the National Cooperative Research Act on October 11, 1984.

1.9—Public Law 98-575, the Commercial Space Launch Act. (H.R. 1011, H.R. 3942, S. 2931)

To facilitate commercial space launches, and for other purposes.

Summary and background of legislation

The enactment of the Commercial Space Launch Act comes at a time when the reusable Space Transportation System bas become operational for space launching in lieu of expendable launch vehicles (ELVs), and when NASA funding for ELVs has been phased out althogether (at the end of FY 1984). The government has taken a position of facilitating the privatization of government ELV launch systems and the development of private-sector space launch services in the U.S. The President's National Space Policy of 1982 and his policy directive of 1983 affirm the government's commitment to encouraging private sector investment and participation in civil space activities. The Committee on Science and Technology has consistently advocated the policy to facilitate commercialization of ELVs but believes that legislation is required to implement this policy successfully.

The Committee saw the need for legislative authority for several major reasons. Government supervision over private space launch activities is necessary to ensure the safety of life and property, to prevent actions that would jeopardize U.S. national security and foreign policy, and to ensure that U.S. treaty obligations are met. Prior to enactment of P.L. 98-575, no single legislative authority existed to address these concerns as they relate to private parties. Further, the Committee anticipates the expansion of world market demand for launch services and notes the desirability, from an economic and competitive standpoint, of increasing the availability of U.S. commercial launch services. For these reaons, the Committee found that the approach to government control of private launch activities which had been adopted over time on and ad hoc basis, may inhibit rather than facilities private space launch activities. A centralized government decision-making process is needed to create a climate more conducive for economic activity in providing commercial launch services.

During May of 1983, the Committee conducted several hearings to take testimony from industry and Administration to explore the need for institutional and organizational changes to facilitate commercial space ventures. The testimony obtained during the hearings focused on the designation of a lead agency with responsibility for commercial space launch activities, and the need for legislation to define the authority and responsibilities of such a lead agency.

The Committee subsequently drafted legislation to centralize the government approval process for commerical space launch activities by designating a single lead agency within the Federal Government to oversee and promote commercial space launch activites. (Government space launch activities are exempt from the requirements of this legislation.) The President subsequently designated the Department of Transporation as the lead agency for the commercialization of expendable launch vehicles. The legislation was redrafted to reflect the designations of Transportation as the lead agency responsible for developing licensing requirements tailored to the commerical launch approval process, issuing and enforcing licenses, and assisting industry in the acquisition of space technology.

As approved, this legislation requires any person engaged in non-government launch operations in the U.S. or any U.S. citizen conducting launch operations outside the U.S. to have a license, issued by the Department of Transportation, authorizing such activities. The Secretary of Transportation is authorized to enforce such licenses, including monitoring and inspection of licensees to ensure compliance. The legislation also promotes commercial space launch activities by authorizing the Secretary to facilitate the lease or purchase of government launch property and related services by private parties.

The legislation authorizes appropriations of $4 million for FY 1985, and such sums as may be necessary through FY 1989. The Secretary is required, within the first year of enactment of this legislation, to report on activities and to make recommendations on additional legislation that may further commercial launch operations.

Legislative history

On January 27, 1983, Mar. Akaka introduced H.R. 1011, to provide encouragement and necessary regulation for the commercial development of space. On February 7, 1983, the measure was referred to the subcommittee on Space Science and Applications. The Subcommittee conducted hearings on space commercialization on May 3, 4, 17, and 18, 1983, during which reference was made to the legislation. On August 3, 1983, the Subcommittee met to mark up the legislation.

On September 21, 1983, a clean bill, H.R. 3942, to provide for commercialization of expendable launch vehicles and associated services, was introduced by Mr. Akaka, to supersede H.R. 1011. On September 23, the bill was referred to the Subcommittee on Space Science and Applications.

On November 18, the Subcommittee conducted a hearing to obtain testimony from the Secretary of Transporation. Prior to the hearing, the President had designated the Department of Transportation as lead agency for the commercialization of expendable launch vehicles. Based on the testimony obtained at the November 18 hearing, H.R. 3942 was redrafted.

On January 11, 1984, reports were requested from the Departments of Transportation, Defense, State, Commerce, and Justice; the National Aeronautics and Space Administration; and the Federal Communications Commission.

On February 14, 1984, comments were received from the Federal Communications Commission; comments from the Department of Transportation and the National Aeronautics and Space Administration were received on March 28, 1984.

On March 29, 1984, the Subcommittee on Space Science and Applications conducted a hearing to receive testimony from the Departments of Transportation and State on matters related to the bill.

The Subcommittee met on April 5 and April 11 to mark up H.R. 3942, and on April 11 reported the measure to Full Committee with an amendment in the nature of a substitute.

On May 10, 1984, the Full Committee met to mark up H.R. 3942 and adopted the Subcommittee's report and several amendments.

On May 23, the Committee resumed the markup and by voice vote, a quorum being present, ordered the bill reported with an amendment inthe nature of a substitute.

On May 31, the Committee report, H.Rept. 98–816, was filed in the House. On June 5, the measure passed the House by voice vote under Suspension of the Rules. On June 7, the legislation was referred to the Senate Committee on Commerce, Science and Transportation.

On October 2, the Senate Committee on Commerce, Science and Transportation reported favorably a counterpart bill, S. 2931. On October 3, the Committee on Commerce, Sceince and Transportation reported this measure to the Senate and filed its accompanying report, S. Rept. 98–656. Also on that date, H.R. 3942 was placed on the Senate Legislative Calendar.

On October 9, 1984, the Senate passed S. 2931 by voice vote and amended H.R. 3942 with the Senate passed language. On that same day, the House agreed to the Senate amendments by unanimous consent, clearing the measure for the white House.

The President signed the legislation on October 30, 1984 as P.L. 98–576.

Committee Publication Numbers 23 and 85, and Serial R.

1.10—Public Law 98–620, the Federal District Court Organization Act of 1984. (H.R. 6163, H.R. 5003)

TITLE V: GOVERNMENT RESEARCH AND DEVELOPMENT PATENT POLICY

To amend Chapter 18 of Title 35 United States Code to clarify patent policy rights under Federal research contracts involving non-profit organizations and small businesses.

Summary and background of legislation

Public Law 96–517, the Bayh-Dole Act, established the general rule that universities and other non-profits, as well as small businesses, may retain title to inventions they discover under Federal contract. P.L. 98–620 amends Public Law 96–517 by expanding the distribution of patent rights and royalty income when a non-profit organization or small business operates a government-owned, contractor-operated (GOCO) laboratory. It also codifies regulations promulgated under P.L. 96–517, establishes administrative and judicial appeals from certain government actions, and takes other steps towards improving the research climate at American universities.

Public Law 98–620 repeals the provisions of P.L. 96–517 which prohibit small businesses and non-profit organizations from granting to other businesses exclusive licenses in government-funded inventions of longer than 5 years duration.

The bill also takes an important step by including novel varieties of plants in the definition of inventions. This provision should greatly increase the royalty revenues of land grant universities.

The legislation transfers title to inventions originating at government labs to their operators, with the qualification that most of the royalties from the licensing of these inventions be used for research, development, or educational purposes related to the mission of the laboratories. It also gives the government the right to retain

title to certain inventions made at the Department of Energy laboratories doing defense programs work. Finally the bill removes any government interest in inventions by recipients of federal scholarships, fellowships and traineeships. Government retention of these rights in certain instances has made recipients of Federal academic aid less employable by industry.

Legislative history

H.R. 5003 was introduced by Congressman Fuqua on March 1, 1984, with Mr Brown of California, Mr. Walgren, Mr. Boucher, Mr. Sensenbrenner, and Mr. Gregg as co-sponsors. The bill was referred jointly to the Committees on Science and Technology and on the Judiciary, and within the Committee on Science and Technology to the Subcommittee on Science, Research and Technology. The Subcommittee on Science, Research and Technology held legislative hearings on May 15 and 16.

The Subcommittee on Science, Research and Technology met on June 19, 1984 for discussion of H.R. 5003. On July 25, 1984, the Subcommittee considered amendments to H.R. 5003, adopted an amendment in the nature of a substitute, and by voice vote, a quorum being present, ordered the bill reported as amended to the Full Committee. The bill was further amended by the Full Committee on August 8, 1984 and ordered reported by voice vote. The bill did not proceed further, at that point, because the House Judiciary Committee needed to take some action before the bill could be considered by the full House of Representatives.

Senator Dole introduced S. 2171, The Uniform Patent Procedures Act of 1983, on November 18, 1983. This legislation was an Administration rewrite of legislation from earlier Congresses to establish a uniform federal patent policy. A hearing on S. 2171 was held March 27, 1984. The bill then lay dormant until September when Agreement was reached in the Senate Judiciary Subcommittee on Patents, Copyrights and Trademarks to strip the bill of all provisions affecting big business, to add an amendment from the House Science Committee version of H.R. 5003 relating to government-owned contractor-operated laboratories, and to add several pages of text concerning inventions policy at government-operated laboratories.

In late September the Senate Judiciary Committee decided to merge six House-passed bills dealing with the Federal courts and intellectual property into a single bill and to add S. 2171 as reported from subcommittee to the package. The Senate version contained government-owned, government-operated (GOGO) laboratory provisions, and other provisions that had not been scrutinized in either the House or the Senate, and lacked several key provisions from H.R. 5003. Rather than solving differences in a Conference Committee, the Senate acted to add seven House provisions dealing with universities and non-profits which had been reported by the Science and Technology Committee, and to drop the GOGO section, so that an identical bill could be passed by both Houses of Congress.

The compromise language was then added to H.R. 6163 on the floor of the Senate on October 3, 1984 without comment. No committee report was issed by the Senate Judiciary Committee. The

only explanations of Senate intent occur in a brief October 5 Senate Judiciary Committee report on S. 2171 (S. Report 98-662) and in an October 5 colloquy between Senators Dole and Domenici.

The compromise then cleared the House on October 9 when H.R. 6163 passed unanimously. Congressmen Fuqua, Walgren, and Lujan made remarks clarifying the intent of the bill. Mr. Fuqua had inserted a comparison of H.R. 5003 and H.R. 6163 in the Congressional Record on October 5. These Congressional Record inserts plus House Report 98-983 of the Committee on Science and Technology which accompanied H.R. 5003 are the major components of the House of Representatives published legislative history of Title V. of H.R. 6163.

The bill was signed into law on November 8, 1984.

Committee Publication Number 98-86.

1.11—PUBLIC LAW 98-623, APPROVAL OF GOVERNING INTERNATIONAL FISHERY AGREEMENTS WITH ICELAND AND THE EUROPEAN ECONOMIC COMMUNITY. (H.R. 6342)

To approve the governing international fishery agreement between the United States and the European Economic Community and a similar agreement between the United States and Iceland, to facilitate the establishment of artificial reefs in the water of the United States, to provide legislative authority to implement the Convention on the Conservation of Antarctic Marine Resources, and for other purposes.

Summary and background of legislation

The Antarctic Marine Living Resources Convention Act of 1983 (H.R. 3416) was incorporated as Title III in H.R. 6342. Title III provides the necessary legislative authority to implement the Convention on the Conservation of Antarctic Marine Living Resources. The Department of Commerce in consultation with the National Science Foundation, State Department, and other appropriate agencies, is directed to design and conduct a research program that is supplemental and coordinated with the United States Antarctic Program. The bill also calls for the support of icebreakers operated by the United States Coast Guard as platforms for scientific research in Antarctica similar to provisions established in Public Law 98-373 regarding the Arctic Research and Policy Act of 1983.

The Committee on Science and Technology has legislative and oversight jurisdiction over two of the agencies, the National Science Foundation and the National Oceanographic and Atmospheric Administration, mandated by Title III to design and conduct the research programs on Antarctic marine living resources and provide for the furnishing of facilities and personnel to the Commission for Conservation of Antarctic Marine Living Resources. Committee staff conferred with staff of the Committee on Merchant Marine and Fisheries and assisted in developing the objectives and lead agency responsibilities designated in this title.

Legislative history

H.R. 3146 was introduced at the request of the Department of State on June 27, 1983, by Mr. Beaux and Mr. Forsythe. The bill

was referred jointly to the Committees on Merchant Marine and Fisheries and Foreign Affairs. On June 30, 1983 a hearing was held on the legislation by the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the Committee on Merchant Marine and Fisheries. On September 22, 1983 the Committee on Merchant Marine and Fisheries, by voice vote, unanimously ordered H.R. 3416 reported to the House without further amendment. On February 2, 1984 the Committee on Science and Technology requested sequential referral of H.R. 3416.

On October 1, 1984 Mr. Jones of North Carolina introduced H.R. 6342 which incorporated H.R. 3146 as Title III of the bill. On October 3, 1984 Chairman Fuqua informed Mr. Jones, Chairman of the Merchant Marine and Fisheries Committee, that in the interest of expediting consideration of H.R. 6342 by the 98th Congress, the Committee on Science and Technology had no objections to bringing the bill to the House, as long as the understanding was clear as to present and future jurisdiction.

On October 4, 1984 the Committee on Merchant Marine and Fisheries discharged the bill by unanimous consent. The bill was called up by the House by unanimous consent on October 4, 1984 and passed the House as amended by voice vote. The bill was received in the Senate on October 5, 1984 and held at the desk. On October 10, 1984 the Senate passed H.R. 6342 without amendment by voice vote and cleared the bill for consideration by the President.

The President signed the bill into law on November 8, 1984.

CHAPTER II—OTHER LEGISLATIVE ACTIVITIES OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY

2.1—The National Science Foundation Authorization Act, Fiscal Year 1984. (H.R. 2066)

To authorize appropriations to the National Science Foundation for fiscal year 1984.

Summary and background of legislation

As a part of its responsibilities, the Committee on Science and Technology authorizes the yearly activities of the National Science Foundation. H.R. 2066 provides authorization for fiscal year 1984. The Committee's legislative actions in relation to H.R. 2066 were based on the budget request for NSF submitted to Congress by the President in January 1983. The request for the NSF for fiscal year 1985 was $1,292.3 million. The NSF request included $1,250.7 million for research and related activities, and $39 million for science and engineering education, including graduate research fellowships and two Presidential initiatives in precollege science and math education, and $2.6 million for special foreign currency. The Committee's recommendations was a total of $1,342.7 million, $50.4 million above the Administration's request.

NSF requested $180 million for replacement and renewal of research instrumentation, an increase of $68 million over FY 1983 expenditures, thus increasing this category to 14% of the NSF total budget. The Committee endorsed NSF's action, but emphasized that it will require a sustained investment over several years to revitalize university laboratories. The Committee added $50 million for a new program to provide high technology instrumentation for new research initiatives, new laboratory development and technology for delivering instruction in public and private, post-secondary institutions.

Again, the committee was concerned by the disproportionately low funding for the behavioral, social, economic and information sciences. Of the $33 million increase requested for the Biological, Behavioral and Social Sciences (BBS) Directorate, only $8.3 million was intended for the behavioral, social and information sciences. The Committee increased the BBS budget by $15 million, directing that funds for programs in the Cognitive Science and Anthropology program elements of the Behavioral and Neural Sciences Division, and in the Social and Economic Sciences Division be restored to at least their approximate 1980 levels. In addition, the Information Science Subactivity was to be increased by $2 million.

Funds for Special Foreign Currencies account were increased by $400,000 to provide monies to coordinate the new U.S./India cooperative program.

In science and engineering education, the Committee felt the NSF requested increase of $9 million, for a total of $39 million, fell far short of the nation's needs. However, it was the Committee's view that the additional $130 million NSF education programs authorized in H.R. 1310 (P.L. 98-377), the Emergency Science and Math Education bill, would complement the requested budget. The Committee intended that, between H.R. 1310 and the NSF authorization, the Foundation would have $169 million for science and engineering education.

The Committee noted with concern the Administration's proposal to shift monies from the Scientific, Technological and International Activities (STIA) Directorate into the Foundation's other research directorates. The Committee felt the proposal had not been sufficiently considered with respect to all of the short and long-term policy implications. In particular, because of the lack of detailed planning and analysis the Committee feared that the special focus and possible entire segments of individual programs, including the International, Women and Minorities in Science, Small Business Innovation Research programs, could be absorbed and lost within the other directorates. The bill therefore directed that $23.2 million within the other research directorates be made available to STIA to continue management of these programs. The Committee intended these monies to be reallocated to STIA by the Foundation upon final appropriation of funds for fiscal year 1984.

Legislative history

H.R. 2066 was introduced on March 11, 1983 by Fuqua, by request, reflecting the Adminstration's proposed budget for NSF for FY 1984 and 1985. The bill was referred to the Committee on Science and Technology and then to the Subcommitee on Science, Research and Technology. Subcommittee hearings on authorizations for FY 1984 were held on February 25, March 1, 8 and 10, 1983. Subcomittee markup was held on April 5, and H.R. 2066, as amended, was reported to the full Committee. The bill was considered in full Committee on April 13 and April 19, 1983, when it was ordered reported, with amendments. House Rept. 98-73 was filed in the House on April 26, 1983. A rule was granted on May 5, 1983, and H.R. 2066 was considered by the House on May 12, 1983. After amending the bill to require a matching grant provision for high technology instrumentation grants in excess of $175,000, the House passed H.R. 2066, by a vote of 297-111. The bill was placed on the Senate calendar on May 16, 1983, where no subsequent action was taken.

Committee Publication Number 98-21.

2.2—The National Bureau of Standards Authorization Act for Fiscal Year 1984. (H.R. 2513)

To authorize appropriations to the Secretary of Commerce for the programs of the National Bureau of Standards for fiscal year 1984, and for other purposes.

Summary and background of legislation

The Committee on Science and Technology has been authorizing appropriations for activities of the National Bureau of Standards since 1980. Prior to fiscal year 1981, the NBS had functioned with a continuing authorization and its annual budget review by Congress was limited to hearings before the House and Senate Appropriations Committees.

For fiscal year 1984, the Administration requested $98.7 million for the National Bureau of Standards, representing a decrease of $19.2 million from the fiscal year 1983 appropriation of $117.9 million. The Committee concluded that the severe reductions proposed for the NBS programs, including the complete elimination of the Center for Fire Research and the Center for Building Technology, and the 70 percent reduction for the Institute for Computer Sciences and Technology, could not be justified and acted to restore funding for these vital programs. In H.R. 2513, the overall budget was increased a modest $7.6 million to a total of $125.5. million for FY 1984 for NBS.

In addition, H.R. 2513 authorized the sum of $3.8 million for the Office of Productivity, Technology and Innovation, which was identical to the Administration's request, and $175,000 for the National Technical Information Service. The Administration had requested zero funding, or a decrease of $1.9 million from fiscal year 1983.

H.R. 2513 also authorized excess foreign currencies for use by the National Bureau of Standards in the amount of $700,000, which was identical to the Administration's request.

Legislative history

H.R. 1996, the Administration's budget proposal, was introduced by Mr. Fuqua on March 9, 1983, by request (Executive Communication No. 377), and referred to the Committee on Science and Technology. The Subcommittee on Science, Research and Technology held hearings on March 22 and 23, 1983, and on April 7, 1983 met to mark up the bill. An amendment in the nature of a substitute was considered in place of H.R. 1996. After discussion of the provisions of the bill and the proposed Committee views, the Subcommittee-adopted two amendments to the bill and ordered it reported to the Full Committee in the form of a clean bill. H.R. 2513 was introduced by Mr. Walgren (for himself), Mr. Fuqua, Mr. Brown of California, Mr. Dymally, Mr. Torricelli, Mr. Reid, and Mr. Boehlert) on April 12, 1983. The Full Committee marked up and reported the bill as amended on April 19, 1983. H. Rept. 98–95 was filed in the House on May 9, 1983. On May 10, 1983 a one-hour open rule was granted by the Rules Committee; however, the bill was not acted upon by the House.

Committee Publication Number 98–1.

2.3—Technical Information Clearinghouse Fund Act of 1983. (H.R. 2514)

To enhance the transfer of technical information to industry, business, and the general public by amending the Act of September 9, 1950 (15 U.S.C. 1151 et seq.) to establish a technical information clearinghouse fund, and for other purposes.

Summary and background of legislation

H.R. 2514 would authorize appropriations to establish in the Treasury of the United States a technical information clearinghouse fund to be available to the Secretary of Commerce, without fiscal year limitation, not to exceed $5 million. The purpose of the legislation is to establish a revolving fund to carry out scientific and technical information clearinghouse activities presently assigned by the Secretary of Commerce under existing law.

The Act of September 9, 1950 (15 U.S.C. 1151–1157), directed the Secretary of Commerce to establish and maintain within the Department of Commerce a clearinghouse for the collection and dissemination of scientific, technical, and engineering information. The Secretary established, within the NBS, the Clearinghouse for Federal Scientific and Technical Information to perform this mandated function. In September of 1970, the Secretary, through Department Organization Order 30–7A, created within the Department of Commerce the NTIS and the clearinghouse function was transferred form NBS to NTIS. At that time, the Department of Treasury assigned a trust fund account for the activities of NTIS.

The NTIS clearinghouse function encompasses the public sale of Government-sponsored technological, scientific, economic, business, and engineering reports, and other analyses prepared or sponsored by national and local governmental agencies, by Federal agencies, their contractors or grantees. In fiscal year 1981, the clearinghouse program became totally self-sufficient for all routine operating costs. Eighty-five percent of NTIS's revenues come from sales to the public, the remainder from sales to Government agencies. Annual sales are approximately $22 million.

The current trust fund mechanism available to NTIS does not provide adequate working capital during periods of broad fluctuations in cash flow. In addition, NTIS is not currently permitted to retain net earnings to develop working capital; therefore, no working capital reserve is available to finance operations or purchase capital assets during low cash periods. As a result of these and related problems, the Department of Commerce, the General Accounting Office, and the Office of Management and Budget concluded that the NTIS trust fund is not adequate for operational needs.

Legislative history

Testimony on the concept of a technical information clearinghouse fund for the National Technical Information Service (NTIS) was received by the Subcommittee on Science, Research and Technology in conjunction with the National Bureau of Standards (NBS) and related agency hearings on March 22, 1983. The bill was introduced on April 12, 1983 and referred jointly to the Committee on Science and Technology and Energy and Commerce. On April 19, 1983 the Committee on Science and Technology by unanimous voice vote ordered reported H.R. 2514. H. Report 98–94, Part 1, was filed in the House on May 9, 1983. No action was taken by the Committee on Energy and Commerce.

Committee Publication Number 98–1.

2.4—The Department of Energy Civilian Research and Development Authorization Act for Fiscal Year 1984. (H.R. 2587)

Authorizing appropriations to the Department of Energy for civilian research and development programs for the fiscal year 1984 and for the continuation in fiscal year 1984 of prior year research and development projects, in accordance with Section 660 of the Department of Energy Organization Act.

Summary and background of legislation

The fiscal year 1984 United States budget was submitted to the House of representatives on January 31, 1983 by President Reagan. Although the authorization for the Department of Energy (DOE) Civilian Research and Development (R&D) programs for fiscal years 1982, 1983 and 1984 was provided by Title X, Subtitle A of the Omnibus Reconciliation Act of 1981 (P.L. 97-35), the DOE submitted an authorization request for fiscal year 1984 on March 9, 1983.

On April 19, 1983, Chairman Fuqua introduced a bill, H.R. 2587, to authorize appropriations to the DOE for fiscal year 1984 for those civilan research and development programs and projects within the Committee's sole jurisdiction. This bill was referred to the Committee on Science and Technology.

H.R. 2587 authorized a total of $3.288 billion for civilian R&D programs and projects within the Committee's jurisdiction. These programs include Fossil Energy; Energy Conservation R&D, including Transportation programs; Energy Supply R&D with respect to Solar Energy, Geothermal Energy, Nuclear Fission, Magnetic Fusion, Electric Energy Systems and Storage, Basic Energy Sciences and other Supporting Research. Environmental R&D, and Policy and Management for Energy Research; Geothermal Resources Development Fund; General Science and Research; and Advanced Isotope Separation Technology and Gas Centrifuge Process Development and Demonstration under the Uranium Enrichment Program.

The total authorization was $558 million above the President's request for fiscal year 1984. The bill continued the authorization of certain prior-year projects and provided authorization for new programs and projects in fiscal year 1984. The bill also included a provision that the funds authorized were to be used only for research, development, and demonstration and a provision that no funds were authorized to be appropriated pursuant to H.R. 2587 or pursuant to the Omnibus Reconciliation Act of 1981 for the continuation or termination of the Clinch River Breeder Reactor project.

The request for new obligational authority to the Committee for Vehicle and Engine R&D for Fiscal Year 1984 was $40,457,000. This amount was 25 percent less than the amount appropriated for Fiscal Year 1983. The request included $9,000,000 to start construction of a High Temperature Materials Lab at Oak Ridge. Discounting the contribution of the project, the budget request to complete ongoing projects was actually 42 percent less than the 1983 appropriation.

The Gas Turbine Engine program plan had always called for convergence to one contractor in Fiscal Year 1983; however, because of

the extremely high level of interest by industry in the ceramics work that is at the core of the project and the different technical approaches being taken, the Committee felt both contractors should be continued through completion of MOD II. The Committee therefore recommended an additional $12,000,000 for this purpose.

Despite Congressional intention to continue the Stirling engine proof-of-concept demonstration, DOE again proposed termination of this project. The Committee felt this action was short-sighted, and recommended $14,000,000 for continuation of the Stirling project toward development and characterization of MOD II.

Additionally, since the organization of the Department of Energy the Committee has authorized the environmental research programs. These programs lie primarily within the jurisdiction of the Office of Health and Environmental Research.

The Committee authorized a total of $267,350,000 for environmental research and development. The budget was divided into the following categories: Environment, Safety and Health; and Biological and Environmental Research.

The Committee further recommeded an increase of $1,143,000 to the Program Direction line to provide for DOE civil service staffing requirements at approximately the Fiscal Year 1983 level. The total authorization was $67,600,000.

Legislative history

The fiscal year 1984 United States budget was submitted to the House of Representatives on January 31, 1983 by President Reagan. A formal authorization request in bill form for the DOE civilian programs was transmitted on March 9, 1983.

On April 19, 1983, Chairman Fuqua introduced H.R. 2587, to authorize appropriations to the Department of Energy for civilian research and development programs and projects for fiscal year 1984. This bill was referred to the Committee on Science and Technology.

Extensive Subcommittee hearings were held during February and March 1983 on the DOE authorization request. On April 21, April 26 and April 27, 1983, the Committee met to mark up the bill, H.R. 2587. After completing this action, the Committee reported the bill, H.R. 2587, as amended, on April 27, 1983 by a recorded vote, 26 yeas and 15 nays. The Committee Report (H.Rpt. 98-81) was filed in the House on May 3, 1983.

On May 12, 1983, H.R. 2587 passed the House, amended, by a vote of 230 yeas and 132 nays. The bill was referred to the Senate Committee on Energy and Natural Resources on May 16, 1983. The Senate took no further action on H.R. 2587.

Committee Publication Numbers 98-2, 4, 9, 10, 12, 18, 30, 58, 62.

2.5—The Environmental Research, Development and Demonstration Act of 1984. (H.R. 2899)

To authorize appropriations for environmental research, development, and demonstration for fiscal years 1984 and 1985, and for other purposes.

Summary and background of legislation

The Committee on Science and Technology has adopted the practice of annually authorizing the Environmental Protection Agency's research program as a way of ensuring that the program is well managed and is supporting the Agency's primary role of protecting public health and welfare.

H.R. 2899 authorized program funds and provided program direction for two fiscal years. This multi-year authorization was intended to promote stability and continuity in the Agency's research program which, given the nature of research, would enhance program quality.

As ordered reported, H.R. 2899 authorized $283,510,000 for fiscal year 1984 and $297,686,000 for fiscal year 1985 for the research programs of the Environmental Protection Agency. The fiscal year 1984 authorization was $78,000,000 above the President's fiscal year 1984 request of $205,510,000. The fiscal year 1985 authorization was $14,176,000 or 5 percent above the fiscal year 1984 funding recommendation. S. 2577, which passed both the House and Senate in 1982 but was ultimately vetoed by the President, authorized $283,500,000 for these same activities for fiscal year 1984.

In addition to program authorizations, H.R. 2899 contained provisions concerning Superfund research, long-term research, the Senior Environmental Assistance program, the EPA Science Advisory Board and indoor air quality. These provisions were identical to those in S. 2577. The EPA Science Advisory Board provision in H.R. 2899, however, did not contain the language requiring representation of the States, industry, labor, academia, consumers, and the general public.

Legislative history

The Subcommittee on Natural Resources, Agriculture Research and Environment held hearings on the fiscal year 1984 EPA budget request for research and development on March 10 and April 27, 1983. In response to these hearings, a draft bill was prepared and presented to the Subcommittee for markup on May 3, 1983. In that meeting, the Subcommittee ordered reported a clean bill to the Full Committee by a unanimous voice vote. The bill, H.R. 2899, was introduced on May 4, 1983 by Mr. Scheuer with four cosponsors (Mr. Brown of California, Mr. Andrews of Texas, Mr. MacKay, and Mr. Torricelli) and referred to the Committee on Science and Technology. H.R. 2899 was considered and ordered reported with amendments by the full Committee on Science and Technology on May 10, 1983. H.Rept. 98-212, Part 1 was filed in the House on May 16, 1983.

H.R. 2899 passed the House on February 9, 1984 by voice vote under Suspension of the Rules. The Senate however, did not act on the bill.

Committee Publication Number 98-113.

2.6—The Atmospheric, Climatic, and Ocean Pollution Act of 1983. (H.R. 2900, S. 1097)

To authorize appropriations for atmospheric, climatic, and ocean pollution activities of the National Oceanic and Atmospheric Administration for fiscal years 1984 and 1985, and for other purposes.

Summary and background of legislation

The purposes of H.R. 2900, as introduced, were: to ensure that the National Oceanic and Atmospheric Administration (NOAA), the lead agency for civil oceanic and atmospheric activities and programs, operates under a clear statutory chapter; to simplify, streamline, and consolidate the authorization of appropriations for NOAA, within the Department of Commerce, such that NOAA's programs can be viewed in a coherent fashion, to reauthorize the National Climate Program Act; to reauthorize the National Ocean Pollution Planning Act; to reauthorize Title II of the Marine Protection, Research, and Sanctuaries Act, and to reauthorize the Weather Modification Reporting Act.

As reported, the bill had several major provisions:

1. It authorized $605,569,000 for NOAA's atmospheric, climatic, and ocean pollution activities for fiscal year 1984, and $635,848,000 for fiscal year 1985. The fiscal year 1984 authorization was $58,684,000 more than the President's request of $546,885,000.
2. It contained substantial amendments to both the National Climate Program Act and Title II of the Marine Protection, Research, and Sanctuaries Act.
3. It prohibited the transfer of civil land, meteorological, and future ocean remote-sensing satellites to the private sector without prior Congressional approval.
4. It authorized $4,000,000 to plan for the continuation of a civil land remote-sensing satellite system to assure data continuity.
5. It directed the National Academy of Sciences to conduct a study of the National Weather Service (NWS) and to make recommendations on how the NWS can incorporate new technologies to provide effective weather services to meet national needs.
6. It mandated a systematic review procedure before any Weather Service Office or Weather Service Forecast Office is closed or consolidated.

The National Oceanic and Atmospheric Administration was created by Reorganization Plan No. 4 as part of the Presidential reorganization in 1970. Since its establishment NOAA has obtained most of its funding for its major programs through direct appropriations with little or no authorization or congressional oversight. Authorization actions that did occur were limited to a few specific areas of interest such as ocean pollution and ocean waste disposal. Because of this lack of a comprehensive view of NOAA and its programs, the Committee decided in 1980 to authorize those programs and activities that fall directly within the Committee's jurisdiction, namely the atmospheric, climatic, and ocean pollution activities. These programs comprise well over one-half of NOAA's total budget. In 1981, a bill (H.R. 2803) authorizing appropriations for NOAA's atmospheric, climatic, and ocean pollution activities passed the House as reported by the Committee on Science and

Technology. In 1982, another NOAA authorization bill (H.R. 6324), which had been developed cooperatively by the Committee on Science and Technology and the Committee on Merchant Marine and Fisheries, passed the House. In neither 1981 nor 1982, however, did the Senate take final action on the NOAA authorization bills.

Legislative history

The Subcommittee on Natural Resources, Agriculture Research and Environment held three days of hearings on the atmospheric, climatic, and ocean pollution activities of the National Oceanic and Atmospheric Administration on March 1, March 9, and March 31, 1983. Testimony was received from NOAA officials and more than 15 public witnesses. In response to the hearings, a Committee print of the bill authorizing appropriations for NOAA was ordered reported by the Subcommittee on May 3, 1983 by voice vote; on May 4, 1983, Mr. Scheuer (with Mr. Brown of California, Mr. Andrews of Texas, Mr. MacKay, Mr. Torricelli, and Mr. Lewis of Florida) introduced the Committee print as H.R. 2900. The full Committee on Science and Technology ordered H.R. 2900 reported on May 10, 1983 by voice vote. On May 16, 1983, the report was filed in the House (H. Rept. 98–135, part 1).

On January 26, 1984, the House passed H.R. 2900, with several amendments, by voice vote. There was a recorded vote on an Andrews (D-Texas) amendment pertaining to NOAA contracting-out procedures, which was adopted by a vote of 257–124. After passage of H.R. 2900, its companion bill S. 1097 (as amended) was passed in lieu thereof.

On April 12, 1984, the Senate agreed to the House amendment to S. 1097 with amendments. On June 5, 1984, the House disagreed to the Senate amendments to the House amendment to S. 1097 and asked for a conference, which was agreed to by the Senate on September 20, 1984. The conference report was filed in both the House and the Senate on September 28, 1984 (H. Rept. 98–1093) and adopted by both bodies on October 3, 1984.

The conference report authorized $929,023,000 in fiscal 1985 and $258,000,000 in fiscal 1986 for certain atmospheric and satellite programs of the National Oceanic and Atmospheric Administration under the Department of Commerce including:

$385.2 million in fiscal 1985 and $2.3 million in fiscal 1986 for atmospheric programs;

$314 million in fiscal 1985 for satellite programs;

$112.3 million in fiscal 1985 and $131.7 million in fiscal 1986 for oceanic programs;

$117.5 million in fiscal 1985 and $124 million in fiscal 1986 for administration.

The report provided that NOAA release the NOAA–D weather satellite for the Navy Remote Ocean Sensing System, pending reimbursement by the Navy and pending a successful launch of the next polar-orbiting weather satellite in November 1984. A 30-day congressional review period prior to contracting of any NOAA activities to the private sector would be required.

Other provisions of the conference report would amend the National Climate Program Act to establish a Climate Program Policy Board responsible for program planning and budgetary review; pro-

vide NOAA with specific guidance in conducting the long-term ocean pollution program mandated by P.L. 95–532; reauthorize both the Marine Protection, Research and Sanctuaries Act and the National Ocean Pollution Planning Act for fiscal 1984 through 1986; and establish the procedure to be followed by the Secretary of Commerce prior to closing or consolidating any office of the National Weather Service.

On October 19, 1984. The President vetoed S. 1097, citing "a number of undesirable provisions (sic) that would unduly effect (sic) the ability of the Department of Commerce to manage its programs responsibly and effectively". The veto message went on to list three specific Administration objections to S. 1097:

(1) "The provisions in Title VI concerning the closing and consolidations of National Weather Service offices are particularly onerous and would have the effect of virtually precluding the consolidation or closing of such offices * * *

(2) "Section 205 of S. 1097 would result in excessive and unjustifiable delays in Department contracting-out activities, * * *

(3) "Section 202(b), which concerns the weather satellite program, is objectionable because it would lessen the Secretary of Commerce's discretion in managing that program."

Committee Publication Numbers 98–66, 98–67.

2.7—Computer Literacy Act of 1984. (H.R. 3750)

To provide assistance to local education agenices and institutions of higher education to promote computer literacy among elementary and secondary school students and their teachers, and for other purposes.

Summary and background of legislation

New computer technologies are greatly influencing every sector of the American economy, including our educational system. The success and appropriate use of computer technology in education will depend upon the availability of computers in the classroom, the number of motivated and knowledgeable teachers, and careful and continuing research.

H.R. 3750 was introduced on August 3, 1983 and referred to the Committees on Education and Labor and Science and Technology.

Following action by the Committee on Education and Labor, the Subcommittee on Science, Research and Technology held hearings on H.R. 3750 on June 5, 1984. The Subcommittee sought to assess the extent to which the proposed legislation met the identified needs, and to identify and define the Federal role in relation to support and improvement of the use of computers in education.

As reported from the Committee on Science and Technology, Title I of H.R. 3750 authorized the Department of Education to make grants to local school districts, particularly in poor areas, for the purchase of computer heardware. Title II authorized funding for teacher training institutes to be arranged by the NSF through grants and contracts to other organizations. Title III provides funds for contracts and grants to be given for dissemination of information on and evaluation of existing educational computer software,

the funds to be adminstered through an interagency agreement between the NSF and the National Institute of Education.

Title I authorized such sums as necessary, for 3 years; Title II authorized $20,000 for each of 10 years: Title III authorized $12,000,000 for each of 10 years.

Legislative history

H.R. 3750 was introduced by Congressman Wirth and several cosponsors on August 3, 1983. The bill was jointly referred to the Committee on Education and Labor and the Committee on Science and Technology. The Education and Labor Committee's Subcommittee on Elementary, Secondary, and Vocational Education conducted a hearing on this bill and related bills, H.R. 1134 and H.R. 4628, on May 1, 1984. The subcommittee met on May 3, 1984, and ordered the bill reported, as amended, on May 8, by a vote of 21-2.

The Subcommittee on Science, Research and Technology of the Committee on Science and Technology, conducted a hearing on H.R. 3750 on June 5, 1984, and ordered H.R. 3750 reported, as amended, to the full Committee. The full Committee on Science and Technology met and ordered the bill reported, as amended, on August 8, 1984, by a voice vote. The report was filed on August 15, 1984. (House Rept. 98-752, Pt. 2).

Committee Publication Number 98-107.

2.8—Research and Development Joint Venture Act of 1983. (H.R. 4043)

To modify the operation of Federal and State antitrust laws with respect to certain joint research and development activities.

Summary and background of legislation

H.R. 4043, as reported, intended to modify the operation of the antitrust laws to encourage the formation of research and development joint ventures in order to increase the effectiveness of technology development and to improve the economic competitiveness of the United States. It provided for antitrust law immunity (including both civil and criminal) for joint R&D ventures that comply with its requirements.

Activities of the R&D joint venture must be strictly limited to research and development in order to fall within the scope of this Act. The manufacturing, marketing or the development of products that could be offered for sale is expressly excluded from activities that may be engaged in by the R&D joint venture.

H.R. 4043 modified the application of Federal and similar State antitrust laws for R&D joint ventures that either choose to be formed and operated in compliance with defined standards or choose to provide to the Attorney General a full and detailed disclosure of the venture's participants and intended activities in addition to compliance with certain of the Safe Harbor standards (Negative Clearance).

It specified award of actual damages for any R&D joint venture found in violation of antitrust laws. It provided for award of attorney's fees to a successful defendant. It required that the "rule of reason" be used in antitrust cases involving research and develop-

ment joint ventures. This provision assured that cases involving R&D joint ventures will not be decided on a "per se" rule by the court, but that a full evaluation of the procompetitive aspects of the case will be made. It included a "burden of proof" requirement: the amended bill required that a plaintiff show both that a cause of action exists under the antitrust laws and that the applicable provisions of the bill have not been complied with in order to prevail in an antitrust action. It sheltered attempts to make R&D contracts even if not successful.

Legislative history

H.R. 4043 was introduced on September 30, 1983, by Congressman Fuqua and 11 other Members of Congress, The bill, as introduced, represents a consolidation of two earlier bills, H.R. 1952 and H.R. 3393. H.R. 1952 was introduced by Congressmen Synar, Gephardt, Wyden and Zschau and H.R. 3393 was introduced by Congressman Sensenbrenner and Congresswoman Lloyd. The original sponsors and co-sponsors of H.R. 1952 and H.R. 3393 are all cosponsors of H.R. 4043. All three of these bills were referred jointly to the Committee on the Judiciary and the Committee on Science and Technology.

On June 29 and 30, 1983, the Subcommittees on Science, Research and Technology and Investigations and Oversight held joint hearings on the subject of Japanese Technological Advances and Possible U.S. Responses Using Research Joint Ventures. These hearings were held to address the general topic area of research and development joint ventures as well as legislative remedies that might be appropriate to further encourage the formation of these ventures. In addition, the Subcommittee on Science, Research and Technology held a legislative hearing on H.R. 1952 and H.R. 3393 on July 12, 1983. The above three days of hearings involved 24 witnesses representing the Administration, the academic community and the private sector including large and small business and representatives from two ongoing research and development joint ventures.

On October 4, 6, and 26, the Subcommittee on Science, Research and Technology held markup sessions on H.R. 4043 and on October 26, 1983, a quorum being present, ordered H.R. 4043 favorably reported by voice vote to the Full Committee with amendments. On November 2 and 3, 1983, the Committee on Science and Technology held markup sessions on H.R. 4043 and on November 3, 1983, a quorum being present, adopted H.R. 4043, as amended, by a recorded vote of 41 to 0 and, by unanimous voice vote, ordered the amended bill favorably reported to the House.

Subsequently the Committee on the Judiciary marked up H.R. 5041 which was based on H.R. 4043. Prior to H.R. 5041 being considered on the Floor, the differences between the two committees' versions were reconciled. As a result, changes were made in the text of H.R. 5041 and in the report of the Committee on Judiciary.

The Committee on Science and Technology supported H.R. 5041 during House Floor consideration. Both Judiciary and Science and Technology Committee Members were appointed to the Committee of Conference on S. 1841, the Senate version of H.R. 5041. Refer to Chapter I, Section 1.8, on Public Law 98–462, for further details.

Committee Publication Number 98–43.

2.9—National Nutrition Monitoring and Related Research Act of 1984. (H.R. 4684)

To establish a coordinated National Nutrition Monitoring and Related Research Program, and a comprehensive plan for the assessment and maintenance of the nutritional and dietary status of the United States population and the nutritional quality of the United States food supply, with provision for the conduct of scientific research and development in support of such program and plan.

Summary and background of legislation

Over the past six years, the Subcommittee on Science, Research and Technology of the Committee on Science and Technology and the Subcommittee on Department Operations, Research, and Foreign Agriculture of the Committee on Agriculture have attempted to motivate the Department of Health and Human Services and the Department of Agriculture to develop a central focus for the coordination of Federal nutrition monitoring activities. The Subcommittees also encouraged the departments to establish a means for other Federal agencies and the public and private sector to participate in the planning and implementation of the National Nutrition Monitoring System.

During the July 14, 1983 hearing, public witnesses recommended that an effective nutrition monitoring system was extremely important to the development of nutrition, agriculture, and health policies in the United States, and that a legislative mandate would assist in establishing a central focus and identifiable resource for Federal nutrition monitoring activities. In response to the nutrition monitoring needs expressed at this oversight hearing, Mr. MacKay, Mr. Brown of California, and Mr. Walgren introduced H.R. 4684 on January 30, 1984.

The principal purpose of H.R. 4684 is to establish and facilitate the timely implementation of a coordinate National Nutrition Monitoring and Related Research Program and to establish a central Federal focus for the coordinating, management, and direction of Federal nutrition monitoring activities. An institutional arrangement which incorporates a Directorate, an Advisory Council and an Executive Director is established to achieve the objectives of the bill.

The bill authorizes appropriations of $2.0 million for fiscal year 1985 to establish the Directorate and the Council, and to develop the Comprehensive Plan. Provisions are included to authorize for each fiscal year of the Program a $2.0 million competitive grant to stimulate nutrition monitoring methods research and a $1.0 million grants program to assist state and local governments in developing the capacity to conduct nutrition monitoring activities.

Legislative history

H.R. 4684 was intorduced on January 30, 1984 by Mr. MacKay, Mr. Brown of California, and Mr. Walgren. The bill was jointly referred to the Committee on Agriculture and the Committee on Sci-

ence and Technology. Forty-eight additional Members co-sponsored the bill.

The Subcommittee on Science, Research and Technololgy of the committee on Science and Technology and the Subcommittee on Department Operations, Research, and foreign Agriculture of the Committee on Agriculture held joint hearings on the bill June 20, 1984. The testimony of public witnesses represented over 50 organizations or coalitions of scientific societies, state and local governments, health and service organizations, consumer, anti-hunger, senior, and religious groups, and food producers and processors. These coalitions expressed the view that the current national nutrition monitoring system needed improvement, continuity in implementation and funding was imperative, and a Congressional mandate was necessary to ensure increased progress and Federal commitment. Administration witnesses indicated significiant progress had been made in implementing the National Nutrition Monitoring System and a commitment to monitoring was exemplified by its implementation of the HHS-USDA Joint Implementation Plan for a Comprehensive National Nutrition Monitoring System submitted to Congress in 1981.

On July 10, 1984, the Energy and Commerce Committee requested sequential referral of the bill. On July 25, 1984, the Subcommittee on Science, Research and Technology adopted an amendment in the nature of a substitute and ordered the bill reported to the Committee on Science and Technology. The amendment simplified the organizational structure of the Directorate, added a grants program to assist state and local governments, added language to assess, analyze and report, on a continuous basis, the dietary and nutritional status of a representative sample of the low income population, and made other minor points of clarification.

On August 8, 1984, the Committee on Science and Technology met to mark up H.R. 4684. The bill was further amended to extend the time allocated for the development of the draft Comprehensive Plan to twelve months. On September 20, 1984, the Committee favorably reported the bill by a vote of 26–13. House Report No. 98–1076, Part 1, to accompany H.R. 4684, was filed in the House on September 25, 1984.

On September 25, 1984, Senator Bingaman introduced S. 3022, a bill identical to H.R. 4684 as reported by the Committee on Science and Technology. On September 26, 1984, the Committee on Agriculture waived its jurisdiction to expedite consideration of the bill by the House during the 98th Congress. On September 27, 1984, the Energy and Commerce Committee took similar action to expedite consideration of the bill by the House, under suspension of the Rules.

H.R. 4684 was scheduled for consideration by the House on October 2, 1984, under Suspension of the Rules. The measure failed by a yea-and-nay vote of 265 yeas to 157 nays, two-thirds of those present not voting in favor.

Committee Publication Number 98–35 and 98–124.

2.10—The National Science Foundation Authorization Act, Fiscal Year 1985. (H.R. 4974)

To authorize appropriations for activities for the National Science Foundation for the Fiscal Year 1985.

Summary and background of legislation

As a part of its responsibilities the Committee on Science and Technology acts on legislation to authorize the yearly activities of the National Science Foundation. H.R. 4974 provides authorization for fiscal year 1985. The Committee's legislative actions in relation to H.R. 4974 were based on the budget request for NSF submitted to Congress by the President in January 1984. This request for the NSF for fiscal year 1985 was $1,501.8 million.

In response to this request the Subcommittee on Science, Research and Technology held five days of hearings in which officials of the National Science Foundation, representatives of the academic community and professional societies, and a Member of Congress presented testimony. Witnesses were asked to address their remarks to the content of the FY 1985 budget request as well as the overall management philosophy in the various programs of the Foundation.

H.R. 4974 authorized a total of $1,560.3 million. This amount is $58.5 million above the request made by the Administration. The increase is broken down in the following fashion: (1) Biological, Behavioral, and Social Sciences is increased by $5.0 million in order to provide additional funding for the behavioral, social, and information sciences; (2) Scientific, Technological and International Affairs is increased by $5.5 million in order to reinstate the Experimental Program to Stimulate Competitive Research (EPSCOR) at a level of $3.0 million and to increase the Research Improvement in Minority Institutions (RIMI) program by $2.5 million; Science and Engineering Education is increased by $8.0 million for Graduate Research Fellowships; and the amount available for Advanced Scientific Computing is increased by $40 million. The bill also required that the amount authorized for the BBS Directorate not less than $73.9 million must be available to the Behavioral and Neural Sciences Division and the Social and Economic Sciences Division, and not less than $8.0 million shall be available to the Information Science and Technology Division. H.R. 4974 also made a change in the NSF Organic Act (Public Law 81-507, as amended) in order to reflect an increased emphasis on fundamental engineering in the Foundation. The amendment added a new function to NSF's mission to authorize the initiation of fundamental engineering research and education, parallel to current NSF functions relating to basic science research and education. The amendment also inserted references to engineering and various fields of engineering throughout the Act in parallel references to science.

Several other small amendments were made to the National Science Foundation Act of 1950 for the purpose of making various minor administrative changes.

Legislative history

H.R. 4974 was introduced by Chairman Fuqua on January 29, 1984. Hearings on the Administration request were held by the Subcommittee on Science, Research and Technology on February 3, 9, 28, 29; and March 21, 1984. The Subcommittee marked up the bill on March 15, 1984. On March 30, 1984 the Committee on Sicence and Technology reported H.R. 4974, with amendments (House Report 98-642). In this bill the Committee recommended an authorization of $1,560.3 million. Included in this total are: $1,473.8 million for Research and Related Activities; $87.3 million for Science and Engineering Education; and $2.8 million for Special Foreign Currency. This represents an increase of $58.5 million over the amount requested by the Administration. Funding authorized by the Committee for most of the research directorates matched the Foundation's request.

On April 25, 1984 the House of Representatives passed H.R. 4974 by a recorded vote of 252-99, after amending the bill to remove $28.7 million for earthquake research programs, which had been provided separate authorization under Public Law 98-241, the Earthquake Hazards Reduction Act. On April 26, 1984, H.R. 4974 was referred to the Senate Committee on Commerce, Science and Transportation. There was no further action on the measure.

Committee Publication Number 98-93.

2.11—The Uniform Science and Technology Research and Development Utilization Act. (H.R. 5003)

To establish a uniform Federal system for management, protection, and utilization of the results of federally sponsored scientific and technological research and development.

Summary and background of legislation

The primary purpose of H.R. 5003 was to remove all legislative roadblocks to implementation of the February 18, 1983 Executive Order, which transferred most inventions occurring under government contract to the private sector employer of the inventor. Under H.R. 5003, as reported by the Committee on Science and Technology, unless a specific exception is invoked by the contracting agency, the contractor's right to retain patent rights for commercial development or licensing of inventions occurring under the contract will be written into the contract. Even if the government has reason to invoke an exception, the contracting agency should review the inventions as they occur and allow the contractor to develop those with commercial potential if it is in the public interest to do so.

Under H.R. 5003, as reported, contractor retention of patent rights is conditioned on good faith efforts to develop and market the invention. If the contractor has made no effort to exploit the technology within three years of issuance of the patent to him or such longer time as the contracting agency may allow, the invention can be listed with the agency's licensing service or the National Technical Information Service as available for licensing, and march-in provisions allowing the government to force licensing of the patent to third parties can be invoked by the contracting

agency at any appropriate time. The march-in provisions also can be used for health and safety of public use reasons.

The intent of the legislation, as reported, remains to transfer patent rights into the private sector for development when transfer is in the best interest of both the government and private sector. Therefore, limited governmental authority to assign patent property rights is provided. The Department of Commerce's lead role in innovation is enhanced by its responsibilities to provide assistance to other agencies in identification of commercial potential in innovations, to publish notification of all government-owned inventions that are available for licensing and to initiate uniform patent regulations and revisions to be promulgated by the director of OMB after public and agency comment.

The other purpose of H.R. 5003, as reported, is to establish a more consistent and effective federal patent policy. Therefore, the bill H.R. 5003, as reported, closely followed the allocation of administrative and review responsibilities made in P.L. 96-517, as amended. It also would amend or stike provisions of over 20 other acts to bring them into conformity with the patent policy contained in H.R. 5003 and P.L. 96-517.

Legislative history

H.R. 5003 was introduced by Chairman Fuqua on March 1, 1984 with Mr. Brown of California, Mr. Walgren, Mr. Boucher, Mr. Sensenbrenner, and Mr. Gregg as cosponsors. The bill was referred jointly to the Committees on Sciences and Technology and on the Judiciary. It was referred to the Subcommittee on Science, Research and Technology. The Subcommittee held legislative hearings on May 15 and 16.

The Subcommittee met on June 19, 1984 for discussion of H.R. 5003. On July 25, 1984 the Subcommittee considered amendments to H.R. 5003, adopted an amendment in the nature of a substitute, and by voice vote, a quorum being present, ordered the bill reported, as amended, to the full Committee. The bill was further amended by the Full Committee on August 8, 1984 and reported from Committee by voice vote. The legislative report was filed in the House on August 15, 1984 (H. Rept. 98-983, Part 1).

The Senate Judiciary Committee considered a companion bill, S. 2171, which originally included provisions establishing a uniform patent policy and provisions broadening P.L. 96-517. In subcommittee, the Senate Judiciary Committee struck the uniform patent policy provisions and substituted three sections on government laboratory policy which had not been the subject of hearings in either the House or the Senate. In addition, the Senate Judiciary Committee did not include a number of provisions of importance to universities which had been added by the Committee on Science and Technology.

Informal negotiations between the Committee on Science and Technology and the Senate Judiciary Committee, after consultation with the House Judiciary Committee, led to a compromise, addition of several provisions from H.R. 5003 to S. 2171, including an amendment to Section 201 dealing with sexually propagated plants; amendments to Section 202 dealing with DOE defense programs, administrative and judicial review, and education as a use of royal-

ties; and new Section 212 dealing with disposition of rights in educational awards. The agreement also provided for the dropping of the laboratory policy sections. The Senate version was modified accordingly on the Floor of the Senate and was added to the Federal Courts bill. The provisions of H.R. 5003, as incorporated by S. 2171, became Public Law 98-620 on November 8, 1984.

For further information, refer to Chapter I, Section 1.10 on Public Law 98-620.

Committee Publication Number 98-86.

2.12—The National Bureau of Standards Authorization Act for Fiscal Years 1984 and 1985. (H.R. 5172/5101)

To authorize appropriations to the Secretary of Commerce for the programs of the National Bureau of Standards for Fiscal Years 1984 and 1985 and for related purposes.

Summary and background of legislation

H.R. 5172, as reported by the House Committee on Science and Technology on March 27, 1984, provided authorization for two agencies; The National Bureau of Standards (NBS) and the Office of Productivity, Technology and Innovation (OPTI). Title I provided authorization for FY 1984 and Title II provided authorization for FY 1985. In addition, both titles contained a provision for excess foreign currencies.

Authorizing legislation, H.R. 2513, for the NBS for fiscal year 1984 was reported by the Committee on May 9, 1983 (House Rept. 98-95). However, that bill was not acted upon by the House. H.R. 2513 would have authorized a total of $125.5 million for the NBS. The appropriations bill provided $115.7 million. The funding levels in Title I of H.R. 5172 were adjusted to reflect the levels of the Appropriations Act, Public Law 98-166.

H.R. 5172 authorized the appropriation of $115.7 million in fiscal year 1984 (Title I) and $132.8 million in fiscal year 1985 (Title II) for the NBS. In addition, the bill authorized the appropriation of $3.6 million in 1984 and $4.1 million in 1985 for the Office of Productivity, Technology and Innovation (OPTI); and $700,000 in 1984 and $600,000 in 1985 for expenses incurred abroad to be paid in foreign currency. An additional $500,000 in FY 1985 was authorized for an independent study and report on the metric system. The bill also allowed NBS to adjust fees for certain goods and services to cover estimated replacement costs.

The Administration's budget for fiscal year 1985 included a request of $126.1 million for the National Bureau of Standards; $3.4 million for the Office of Productivity, Technology and Innovation; and, as in fiscal year 1984, zero funding for the National Technical Information Service which has become self-sustaining.

For the second consecutive year, the Administration's budget reflected severe reductions in several NBS programs: the complete elimination of the Centers for Fire Research and Building Technology, and a severe cut for the Institute for Computer Sciences and Technology. H.R. 5172 restored funding for these vital programs.

Legislative history

On February 2 and 7, 1984, the Subcommittee on Science, Research and Techology held hearings on a draft authorization bill for NBS. On March 8, 1984, Mr. Walgren (for himself) and Mr. Brown of California introduced H.R. 5101. A Subcommittee markup of H.R. 5101 was held on March 13 and 14, 1984 and a clean bill was ordered to be reported to the full Committee. H.R. 5172 was introduced on March 15, 1984 and full Committee markup was held on March 22 and 27, 1984 resulting in the bill being reported with amendments by a recorded vote of 26 to 13.

H. Rept. 98–650 was filed on April 4, 1984. On April 9, 1984 the Committee on Rules granted a one-hour, open rule. H.R. 5172 was considered by the House on April 26, 1984, and the bill passed the House, amended, on May 2, 1984. H.R. 5172 was referred to the Senate Committee on Commerce, Science and Transportation on May 3, 1984. On August 8, 1984, the bill was ordered reported by the Senate Committee on Commerce, Science and Transportation with an amendent in the nature of a substitute and an amendment to the title. It was reported by the Senate on August 27, 1984 with no written report. H.R. 5172 passed the Senate on September 21, 1984 with amendments bringing authorization levels in line with the appropriations bill for NBS, the addition of S. 1286 as reported by the Science and Technology Committee as Title II, and an engineering amendment to the National Science Foundation Organic Act, as contained in H.R. 4974 as Title III. On October 4, 1984, the House passed H.R. 5172, as amended, and sent the bill to the President for signature. On October 30, 1984, the President vetoed the bill.

Committee Publication Number 98–91.

2.13—The Department of Energy Civilian Research and Development Authorization Act for Fiscal Years 1985, 1986, and 1987. (H.R. 5244)

Authorizating appropriations to the Department of Energy for civilian research and development programs for fiscal years 1985, 1986, and 1987, in accordance with Section 660 of the Department of Energy Organization Act.

Summary and background of legislation

The fiscal year 1985 Department of Energy (DOE) budget was submitted to the House of Representatives on February 1, 1984 by President Reagan. The formal authorization request in bill form for the DOE civilian energy programs was submitted on March 9, 1984.

On March 24, 1984, Chairman Fuqua introduced H.R. 5244, to authorize appropriations to the Department of Energy for civilian research and development programs and projects within the sole jurisdiction of the Committee for fiscal years 1985, 1986, and 1987. This bill was referred to the Committee on Science and Technology.

The civilian R&D programs and projects solely within the Committee's jurisdiction and for which H.R. 5244 provided authorization include: Fossil Energy; Energy Conservation R&D, including Transportation programs; Energy Supply R&D with respect to Solar Energy, Geothermal Energy, Nuclear Fission, Magnetic

Fusion, Electric Energy Systems and Energy Storage Systems, Basic Energy Sciences and other Supporting Research, Environmental R&D, and Policy and Management for Energy Research; Geothermal Resources Development Fund; General Science and Research; and Uranium Enrichment R&D (Advanced Laser Isotope Separation Technology and Gas Centrifuge R&D),

Title I of H.R. 5244 authorized a total of $3.337 billion in new budget authority for fiscal year 1985. The bill authorized an additional $33 million in fiscal year 1985 to be provided from existing unobligated balances in the Uranium Enrichment account to be used for advanced enrichment technologies.

Title II of H.R. 5244 authorized appropriations for fiscal years 1986 and 1987 for the above programs and projects at $3.534 billion and $3.654 billion, respectively.

The request for new obligational authority for FY 1985 for Vehicle and Engine R&D was $49,352,000. This amount was 24 percent less than the amount appropriated for Fiscal Year 1984.

The Gas Turbine Engine program plan had called for the convergence to one contractor; however, due to the extremely high level of interest by industry in the ceramics work that is at the core of this project and the different technical approaches being taken, the Committee felt both contactors should be continued through completion of full engine characterization. Thus, the Committee recommended an additional $2,500,000 for this purpose, with the expectation that any funding shortfall be made up by additional contractor cost sharing.

Despite Congressional intention to continue the Stirling engine proof-of-concept demonstration, DOE again proposed termination of the project. The Committee felt this action was short-sighted; thus, recommended $17,500,000 for continuation of the Stirling project toward development and characterization of MOD II.

The DOE proposed ending technology development of lead-acid and nickel-iron batteries. The Committee felt this action was premature and that advances in battery capability were key to the eventual success of electric vehicles. Thus, the Committee recommended an increase of $1,500,000 to continue this effort.

The Committee felt the total estimated construction cost for the High Temperature Materials Lab was excessive for the size and type of building proposed, and recommended a $4,000,000 reduction in this line item for FY 1985, with $2,700,000 of this amount recommended for deferral to FY 1986. The total authorization was $66,852,000.

Additionally, since the organization of the Department of Energy, the Committee has authorized the environmental research programs. The programs lie primarily within the jurisdiction of the Office of Health and Environmental Research.

The Committee authorized a total of $243,754,000 for environmental research and development. The budget was divided into the following categories: Environment, Safety and Health; and Biological and Environmental Research.

For fiscal year 1985, the authorization provided by H.R. 5244 was $166.2 million above the President's request for new budget authority.

Legislative history

On March 24, 1984, Chairman Fuqua introduced H.R. 5244, to authorize appropriations to the Department of Energy for civilian research and development programs and projects within the sole jurisdiction of the Committee for fiscal years 1985, 1986, and 1987. This bill was referred to the Committee on Science and Technology.

Extensive hearings were held during February and March 1984 on the Department of Energy authorization request. On March 27 and April 3, 1984, the Committee met to mark up the bill. After completing markup, the Committee reported the bill, H.R. 5244, as amended, on April 3, 1984 by a vote of 26 to 14. The legislative report (H. Rpt. 98-686) was filed in the House on April 12, 1984. On August 6, 1984, H.R. 5244 was called up by the House by Rule; however, the House did not complete consideration of the bill during the remainder of the 98th Congress.

Committee Publication Numbers 98-73, 77, 87, 88, 89, 101.

2.14—Department of Energy Civilian Energy Programs Authorization Act for Fiscal Years 1985, 1986, and 1987. (H.R. 5245)

Summary and background of legislation

On March 24, 1984, Chairman Fuqua introduced H.R. 5245, to authorize appropriations to the Department of Energy (DOE) for civilian energy programs and projects for fiscal years 1985, 1986 and 1987. This bill was referred jointly to the Committees on Science and Technology, Energy and Commerce, and Interior and Insular Affairs.

The civilian energy programs and projects authorized in H.R. 5245 include all of the civilian energy R&D programs and projects contained in H.R. 5244 and those programs and projects of joint jurisdiction with the two other Committees in Solar Energy, Energy Conservation, Nuclear Fission, Uranium Enrichment and most of the elements of the DOE's Departmental Administration budget.

Titles I and III of H.R. 5245 authorized a gross total of $5,810,438,000 in new budget authority for fiscal year 1985. Accounting for projected uranium enrichment revenues, this corresponds to a net authorization of $4,135,138,000 in new authority. (The bill authorized an additional $33 million in fiscal year 1985 from unobligated balances in the Uranium Enrichment account to be used for advanced enrichment technologies as authorized in H.R. 5244.)

Title II of H.R. 5245 authorized appropriations for fiscal years 1986 and 1987 for the above programs and projects at $3,533,823,000 and $3,654,393,000, respectively. For fiscal year 1985, the authorization provided by H.R. 5245 was $174,487,000 above the Administration's request of $5,635,951,000 for new budget authority.

The request for new obligational authority for FY 1985 the Committee for Vehicle and Engine R&D was $49,352,000. This amount was 24 percent less than the amount appropriated for Fiscal Year 1984.

The Gas Turbine Engine program had called for the convergence to one contractor; however, due to the extremely high level of interest by industry in the ceramics work that is at the core of this project and the different technical approaches being taken, the Committee felt both contractors should be continued through completion of full engine characterization. Thus, the Committee recommended an additional $2,500,000 for this purpose, with the expectation that any funding shortfall be made up by additional contractor cost sharing.

Despite Congressional intention to continue the Stirling engine proof-of-concept demonstration, DOE again proposed termination of the project. The Committee felt this action was short-sighted; thus, recommended $17,500,000 for continuation of the Stirling project toward development and characterization of MOD II.

The Department proposed ending technology of lead-acid and nickel-iron batteries. The Committee felt this action was premature and that advances in battery capability were key to the eventual success of electric vehicles. Thus, the Committee recommended an increase of $1,500,000 to continue this effort.

The Committee felt the total estimated construction cost for the High Temperature Materials Lab was excessive for the size and type of building proposed, and recommended a $4,000,000 reduction in this line item for FY 1985, with $2,700,000 of this amount recommended for deferral to FY 1986. The total authorization was $66,852,000.

Environmental Programs. $15.5 million increase to maintain human research. The Committee recommended maintaining long-term research in the areas of human diseases, including cancer and cardiovascular studies.

Legislative history

The fiscal year 1985 Department of Energy budget was submitted to the House of Representatives on February 1, 1984 by President Reagan. The formal authorization request in bill form for the DOE civilian energy program was submitted on March 9, 1984.

On March 24, 1984, Chairman Fuqua introduced H.R. 5245, to authorize appropriations to the Department of Energy for civilian energy programs and projects within the sole jurisdiction of the Committee and those programs of joint jurisdiction with two other Committees for fiscal year 1985, 1986, and 1987. This bill was refered jointly to the Committees on Science and Technology, Energy and Commerce, and Interior and Insular Affairs.

Extensive hearings were held during February and March 1984 on the Department of Energy authorization request. On March 27 and April 3, 1984, the Committee met to mark up the bill. After completing markup, the Committee reported the bill. H.R. 5245, as amended, on April 3, 1984 by a voice vote. The Committee Report (H. Rept. 98-688, Pt. I) was filed in the House on April 12, 1984.

Committee Publication Numbers 98-73, 77, 87, 88, 89, 101.

2.15—The Manufacturing Sciences and Robotics Research and Development Act. (S. 1286, H.R. 4415, H.R. 4047)

To establish a program to conduct research and development for improved manufacturing technologies, to foster the development and use of robots and automated manufacturing systems, and for other purposes.

Summary and background of legislation

Manufacturing contributes significantly to the Nation's gross domestic product and employs more than one-fifth of the Nation's workforce. However, many of our manufacturing processes and methods are no longer capable of producing goods as reliable and cost competitive as those produced by foreign industries which utilize modern manufacturing methods and processes. The purpose of this bill is to restore American technological leadership and innovation in manufacturing.

S. 1286, as reported by the Committee on Science and Technology, authorized the Office of the Assistant Secretary of Commerce for Productivity, Technology and Innovation (OPTI), within the Department of Commerce, to fund through grants and cooperative agreements, basic and applied research on manufacturing technologies, in universities, non-profit institutions, firms, industry associations, and other institutions. The Secretary of Commerce is directed to award such grants and enter into such contracts with applicants who meet the criteria of the Act.

The bill authorized the Secretary of Commerce to enter into cooperative agreements with consortia (defined as groups consisting of a non-profit research institution and such other entities as States or subdivisions thereof, industry, industry associations, other non-profit research institutions, and universities and other higher education institutions, including two and four year colleges) to establish and support geographically distributed centers. These centers would conduct research on new technologies and/or on methods of increasing the utilization by private industry of existing advanced manufacturing methods. The research carried out at the centers may be directed to the needs of a particular industrial sector.

S. 1286 established a Federal Research Center on Robotics and Automated Manufacturing at the National Bureau of Standards to focus on measurements and standards required in robotics and automated manufacturing systems, including interface standards for integrated robot systems and systems integration, reliability, and performance. A provision for funding of education and training in robotics and automated manufacturing is included.

The legislation authorized the Secretary of Commerce to establish a program to study the impact of advanced manufacturing methods on workers, including the potential for retraining displaced workers, and to submit a report to the Congress no later than two years after enactment of the bill.

The Secretary of Commerce is also authorized to study the technological competitiveness of selected industry sectors and to establish a Manufacturing Sciences and Technology Enhancement Advisory Committee. The Advisory Committee is to recommend to the

Secretary policies and selection criteria for individual industrial sectors in need of assistance; assess the effectiveness of the programs funded under the Act; and submit annual report to the Congress.

The bill authorized on a program-by-program basis funding totaling $250 million; $52 million in 1985; $64 million in 1986; and $67 million in 1987 and 1988.

Legislative history

S. 1286, the "Manufacturing Sciences and Technology Research and Development Act of 1983", was introduced on May 16, 1983 by Senate Slade Gorton, and hearings were held by the Senate Subcommittee on Science, Technology and Space on June 21, 23, November 23, December 6, and 7, 1983. On March 27, 1984, the Committee on Commerce, Science, and Transportation ordered S. 1286 reported with an amendment in the nature of a substitute. S. Rept. 98-431 was filed on May 8, 1984 in the Senate. On June 8, 1984, the bill passed the Senate with an amendment in the nature of a substitute. S. 1286 was referred to the Committee on Science and Technology on June 12, 1984.

H.R. 4415, the "Manufacturing Sciences and Technology Research and Development Act of 1983", which is the House counterpart to S. 1286, was introduced by Chairman Fuqua on November 16, 1983. On June 13 and 14, 1984, the Subcommittee on Science, Research and Technology held hearings on H.R. 4415 and S. 1286, as well as H.R. 4047, the "Robotics and Automated Manufacturing Systems Research and Education Act of 1983", which is also introduced by Chairman Fuqua on September 30, 1983.

Based upon recommendations received at the hearings, the Subcommittee marked up S. 1286 on July 25, 1984, and reported out an amendment in the nature of a substitute. The substitute retained the Senate-passed text of S. 1286; and added provisions from H.R. 4047 relating to robotics and education and training; and included language meant to broaden the meaning of the term "industrial sector."

On August 8, 1984, the Full Committee began markup of the bill and adopted several amendments which focused the purpose of the bill on programs to conduct research on manufacturing technologies and utilization activities rather than to conduct experimental utilization activities. The amendments removed language from the Senate bill that might be interpreted as placing the Federal Government in the position of selecting "technology winners and losers." Another amendment adopted strengthened the linkage between the assistance provided under the bill and the competitiveness study and the Advisory Committee called for in the measure.

On September 20, 1984, a quorum being present, the Committee ordered the bill favorably reported by a vote of 29 yeas to 10 nays. The legislative report was filed on September 25, 1984 (H. Rept. 98-1078).

On September 21, 1984, the Senate passed H.R. 5172, the National Bureau of Standards FY 1985 Authorization Act, and included S. 1286 as reported by the Science and Technology Committee as Title III of that bill.

On October 4th, the House passed the bill H.R. 5172, as amended by the Senate, by voice vote and sent it to the President for signature. On October 30, 1984, the President vetoed the bill.

2.16—Civil Meteorological Satellite System. (H. Con. Res. 168)

Expressing the sense of the Congress that it is not appropriate at this time to transfer ownership or management of any civil meterorological satellite system and associated ground system equipment to the private sector.

Summary and background of legislation

On March 8, 1983, President Reagan announced his decision to commercialize civil weather and land remote-sensing satellites. Secretary of Commerce Malcolm Baldrige testified on the proposed sale on April 14, 1983, before the Subcommittee on Natural Resources, Agriculture Research and Environment and the Subcommittee on Space Science and Applications. The two subcommittees held four additional hearings on the proposed sale in June and July of 1983—hearings which elicited strong opposition to the proposed sale of civil weather satellites both from the private sector and from a broad range of current and former Government officials.

Meanwhile, a Source Evaluation Board for Civil Space Remote-Sensing (SEB) had been established to develop a request-for-proposal (RFP). The RFP would specify the terms under which U.S. industry would bid on the satellite systems. The final FRP was scheduled to be released to industry in December, 1983, with selection of the winning bid by the Secretary of Commerce tentatively set for May, 1984.

The Committee took the view, after reviewing both the public testimony and the draft RFP, that the proposal to transfer weather satellites was not sound, and that considerable time, effort, and resources would be saved by halting the proposal immediately. The Committee reached this conclusion for several reasons. Weather satellite data are utilized almost exclusively in public services—that is, well over 95 percent of the data generated by these satellites are used by civil and military agencies of the U.S. Government. The Committee felt that it made little sense to transfer an inherently governmental system and then to sign a long-term contract for data services which could cost the taxpayer millions of dollars. Nor could it be claimed that selling the satellites would increase commercial marketing of weather information, since the RFP required that the successful bidder allow for free and open distribution of weather data by the Federal Government, both internationally and domestically.

Economics aside, the sale would also have had extremely serious implications for both national security and public safety. Selling the civil weather satellites would have necessitated significant, and perhaps unwieldy, oversight and regulation by the Department of Defense, which relies on civil weather satellite data both in its routine operations and in emergencies. The threat to public weather services arose because a private operator with a secure, long-term contract would have little motivation to improve his services.

Perhaps most importantly, the Committee felt that pursuing the sale of weather satellites needlessly complicated the urgent need to maintain U.S. leadership in land remote-sensing. Eliminating the weather satellite proposal would increase the likelihood of resolving the Landsat issue early in 1984, in time to maintain a viable U.S. presence in a growing field where we face stiff competition from the French and the Japanese.

Legislative history

House Concurrent Resolution 168 was introduced by Mr. Andrews (Texas) and 15 original cosponsors on September 19, 1983. The Subcommittee on Natural Resources, Agriculture Research and Environment reported the concurrent resolution to the full committee on October 19, 1983, by a roll call vote of 13 to 0. On November 3, 1983, the full Committee on Science and Technology ordered House Concurrent Resolution 168 reported by voice vote. H. Rept. 98–509 was filed on November 8, 1983.

H. Con. Res. 168 passed the House under suspension of the rules on November 14, 1983, by a recorded vote of 377–28. On November 15, 1983, H. Con. Res. 168 was referred to the Senate Committee on Commerce, Science, and Transportation, where no further action was taken. The senate, however, had already passed a similar resolution, S. Con. Res. 67, on October 7, 1983.

The Administration's proposal to transfer weather satellites was finally dropped on November 28, 1983, with the passage of P.L. 98–166, the FY 1984 Appropriations Act for the Department of Commerce, which contained language prohibiting the use of funds in FY 1984 for such transfer.

Committee Publication Number 98–53.

2.17—H. Con. Res. 190, Global Positioning System

A concurrent resolution expressing the sense of the Congress that the Secretary of Transportation should submit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate full research and development program planning documentation leading to expedited use by the civilian sector of certain satellite-directed navigational aids developed by the Department of Defense for the guidance of aircraft.

Summary and background of legislation

Following the tragedy in which a Korean airliner was shot down by a Soviet fighter after straying into airspace of the Soviet Union, the White House and the FAA announced that Satellite Directed Navigation (GPS—Global Positioning System) would be made available for civil aviation users by 1988. The Global Positioning System offers a number of advantages over the currently available navigation systems. GPS coverage is world-wide and much more accurate than the various alternatives. Benefits to civil aviation from GPS would include increased safety and more efficient use of the airspace.

The FAA had not submitted a detailed research and development program plan for the expedited use of GPS by civil aviation. The

purpose of this resolution is to express the sense of Congress that such plan should be submitted to the appropriate Committees in order to facilitate expedited civil use of GPS navigation technology.

Legislative history

H. Con. Res. 190 was introduced on October 19, 1983, referred to the Committee on Science and Technology, and referred to the Subcommittee on Transportation, Aviation and Materials on October 24, 1983. The Subcommittee had conducted an oversight hearing on September 19, 1983 on aircraft navigation technology and errors. On October 27, 1983 the subcommittee considered and reported the measure to the Full Committee. On November 3, 1983, the Full Committee ordered the Resolution reported, and on November 8, 1983, the report was filed in the House (H. Rept. 98-510). On November 14, 1983, the Resolution passed the House under Suspension of the Rules by a yea-nay vote of 402-0. On November 15, 1983, the measure was referred to the Senate Committee on Commerce, Science, and Transportation. There was no further action on the measure during the 98th Congress.

Committee Publication Number 98-33.

CHAPTER III—OVERSIGHT, INVESTIGATIONS AND OTHER ACTIVITIES OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY, INCLUDING SELECTED SUBCOMMITTEE LEGISLATIVE ACTIVITIES

3.1—The Committee on Science and Technology

3.1(A)—Science Policy Task Force

During the 98th Congress a Science Policy Task Force, comprised of 18 House Members of both political parties, was established to set an agenda for a comprehensive study to culminate in a report during the 99th Congress.

With the level of the Federal Government's support for basic and applied scientific research having reached $18 billon per year, the policies governing those expenditures are to be reviewed in depth by the committee. The committee is concerned that present policies and practices, many of which are traceable to the report by Vannevar Bush titled Science—the Endless Frontier in 1945, may not fully address the new environment facing U.S. science in the coming decades; hence, there is a need to review current policy and to address the long-range plans for scientific policy for the nation.

The task force was charged with the identification of issues, policies, and practices which will form the agenda of the Science Policy Study. The agenda for the study falls into broad categories, such as the institutional framework for the support and conduct of scientific research, the training and education of young scientists, research funding methods, and the overall funding levels for science.

3.1(B)—United States-Japan Parliamentary Committee on Science and Technology

A U.S.-Japan Parliamentary Committee on Science and Technology was established during the 97th Congress. The Committee consists of Members of the Committee on Science and Technology and Members of the Japanese Diet. The purpose of the Committee is to explore, and an annual basis, areas where the two countries can cooperate as well as compete positively, on international issues of science and technology for the betterment of mankind.

3.1(C)—Establishment of Uranium Enrichment Tri-Committee Advisory Panel

When the Committee filed its report on the FY 1985, 1986 and 1987 budget for the Department of Energy (H. Rpt. 98-688, Part I), it also agreed to form an advisory panel with the two other authorizing Committees in the House of Representatives, the Committees on Energy and Commerce and Interior and Insular Affairs. Recognizing the importance of the uranium enrichment enterprise, the

Committees obtained the consent of six prominent business executives and/or consultants to serve as an advisory panel to the Committees on the business aspects of the Uranium Enrichment program. The advisory panel was asked to restrict its comments to the business aspects on the program.

The panel reported to the Committees on September 11, 1984. Among their more important recommendations were that the DOE: establish a "private business management structure for the enrichment enterprise . . . [with] specific business objectives . . . [and] outside business and financial advisors"; establish a formal outside review of the internal DOE decision (scheduled to be made early next year) to select an advanced enrichment technology for deployment; base any decision on advanced technologies more on the "business values of the technical features" and less on the "technical sophistication and large scale engineering efficiency of advanced technologies"; and strengthen the "marketing and sales" organization within DOE.

The Committees subsequently wrote to the Secretary of Energy on October 1, 1984 to commend the report to his attention and to highlight two of the fifteen recommendations made by the advisory panel. The letter underlined the importance of "specific written business objectives for the enrichment enterprise . . . and [the definition of] a market policy and strategy." Secondly, the letter strongly encouraged the Department "to incorporate business planning and market and financial evaluations into the selection process for the advanced technology."

Committee Publication Number 98-121.

3.1(D)—The Results of the Space Shuttle Flights

Since the inception of actual flights of the Space Transportation System, the Committee has made it a practice to invite the participating astronauts of each mission to brief the Members of the Committee on Science and Technology on the unique merits and achievements of each flight.

During the 98th Congress, astronauts appeared before the Committee on July 19, 1983, September 27, 1983, May 15, 1984 and September 25, 1984.

Committee Publication Numbers 98-13, 98-39, 98-83, 98-115.

3.1(E)—Views of 1982 and 1983 Nobel Laureates

1982

Summary of hearing

The Committee's annual hearing with the 1982 Nobel Laureates in science took place on February 23, 1983. The Committee heard from physics laureate, Dr. Kenneth Wilson of Cornell University, and Dr. Sune Bergstrom, the Swedish laureate in medicine and physiology. In addition, the Committee received testimony from the President of the U.S. National Academy of Sciences, Dr. Frank Press.

Dr. Bergstrom noted his indebtedness to various American research organizations, including the Rockefeller Foundation and the National Institutes of Health, which supported him when he began

his research career in 1940. He felt that the freedom which U.S. research policies permitted had served science well, and he observed that science supported programs in his native Sweden, which has emerged since he began his own work, were patterned on the American system.

Dr. Wilson devoted his statement to the overriding importance, as he saw it, that researchers in many fields be provided access to the most modern computers, including the new generation of supercomputers. Dr. Press referred to the Academy's recent participation in the preparation of the Five Year Outlook Report for Science and Technology. He pointed to the strong competition which has emerged from scientists in other countries and urged that the Congress pay close attention to the needs of American science in the emerging environment of constrained Federal budgets. He stressed that U.S. leadership can only be maintained if support is provided on a broad front, including those fields of science which may not have an immediate and obvious pay-off.

Committee Publication Number 98-34.

1983

Summary of hearing

The Committee's annual hearing with the 1983 American Nobel Laureates took place on March 8, 1984. Dr. Gerard Debreu, the laureate in economics, who is a Professor in Economics and Mathematics at the University of California, Berkeley, California, noted the superb conditions for research which he found in the United States when he came from France which, in his view, still prevail. But he also noted that recent trends gave him cause for a good deal of concern about whether those conditions could be preserved in the future.

Dr. William A. Fowler, the laureate in physics, who is a Professor of Physics at the California Institute of Technology, Pasadena, California, expressed his concern about science education at the undergraduate and high school levels. He also urged the Committee to pay particular attention to insuring that crucial scientific experiments be given the support they need, even if they involve substantial funds for large, complex facilities. As one example, he described in detail the need for a gallium detector for a solar neutrino detection experiment.

Dr. Barbara McClintock, the 1983 laureate in medicine and physiology, who is a senior research fellow at the Cold Springs Harbor Laboratory, Long Island, New York, expressed her concern about the growth of administrative procedures and associated paperwork involved with research supported by the government. Dr. Henry Taube, the laureate in chemistry and a Professor in Chemistry at Stanford University, Palo Alto, California urged more freedom in the conduct of research in order to increase creativity in science. He noted that this is particularly important for younger scientists.

Committee Publication will be available.

3.1(F)—1983 Science and Technology posture Hearing on the Office of Science and Technology policy and the Fiscal Year 1985 Federal R&D Budget

The Committee held its annual posture hearing on science and technology on February 3, 1983. The sole witness was the Science and Technology Advisory to the President, Dr. George A. Keyworth, who is also Director of the Office of Science and Technology Policy.

Dr. Keyworth stated the Administration's basic policy of continuing and strengthening support for basic research and science education, while reducing or eliminating the Federal Government's role in technology development. During the discussion the Members raised a number of questions regarding support for engineering education, the growing role of university research supported by the Department of Defense, the proposed budget reductions in certrain portions of the energy R&D program, the relationship of the government's R&D programs to international trade competitiveness.

Committee Publication Number 98-31.

3.2(G)—Hearing on the Five Year Outlook Report on Science and Technology

Background

A one day hearing to review the current Five Year Outlook Report on Science and Technology was conducted by the Committee on January 24, 1984. This report was mandated by the Science Policy Act of 1976, which requires that the Office of Science and Technology Policy submit to the Congress every other year a forecast of significant developments in science and technology and their potential effects on government policies.

Summary of hearing

One of the invited witnesses was the Chairman of the Science, Engineering and Public Policy Committee of the National Academy of Science, Dr. George M. Low, who is also President of Rensselaer Polytechnic Institute, Troy, New York. Dr. Low was accompanied by the Study Chairman for the Outlook Report, Dr. Floyd E. Bloom, who is also Director of the Davis Center for Behavioral Neurobiology at the Salk Institute, San Diego, California. Dr. Low and Dr. Bloom discussed the contents of the Five Year Outlook Report, and described the extensive consultations with a wide range of members of the scientific community which had gone into its preparation. They noted their recommendation that the National Academy of Sciences' contribution to the preparation of the report in the future should be reduced substantially to make it easier for readers in policy making positions to read and benefit from the Outlook report.

The Administration's views on the Outlook report were presented by the Assistant Director of the Office of Science and Technology Policy, Dr. James G. Ling. Dr. Ling noted that his Office also relied on special briefings from the Academy's Science, Engineer-

ing and Public Policy Committee for information about potential future developments in science and technology.

Several outside witnesses provided the Committee with their views about the usefulness and content of the report. Dr. Richard A. Rettig, the Chairman, of the Department of Social Science at the Illinois Institute of Technology, Chicago, Illinois, noted several problems with the report and proposed that it might be substantially improved if the Congress itself took charge of its preparation. Drs. H. Russell and Elisabeth Cort, a husband and wife team who had done an extensive evaluation of the Five Year Outlook Report through interviews, presented statistical information that they had gathered about various aspects of the report.

Committee Publication will be available.

3.1(H)—Improving the Research Infrastructure at U.S. Universities and Colleges

Background

For several years our universities and colleges have been facing serious facility and instrumentation problems. A recent survey conducted by the Association of American Universities found that leading U.S. research institutions are able to meet only half of their projected facilities needs. Also, by comparison, university research instruments were found to be twice as old as the same instruments used in commercial laboratories.

Concerned with the deteriorating condition of our university science and engineering research capabilities, the Committee on Science and Technology held a hearing to assess the current state of university research facilities, including buildings and instrumentation, and to explore the role government should play in support of the research infrastructure.

Summary of hearing

The hearing was held on May 8, 1984, and the witnesses included Dr. George Keyworth, the President's science advisor, as well as numerous representatives from academia.

In describing the critical problems facing universities, many witnesses testified that science and engineering buildings require increasingly complex design because of the type of equipment they house. This need for large capital expenditures comes at a time of declining enrollment and decreased Federal funding. Witnesses made recommendations that both Federal and State governments could employ to address the problems, including: greater university, government and private cooperation; establishing new Federal and State funding mechanisms; and reviving past programs, such as NSF's Graduate Science Facilities Program.

In response to Dr. Keyworth's belief that the Federal government should take a fresh look at relations between mission agencies and universities, the White House Science Council will undertake a study to examine: the Federal government's role in ensuring a productive research environment, including the problem of indirect costs; the effects on research productivity of the uncertainties and red tape involved in funding; the problem of university physical facilities and instrumentation; and ways to increase interac-

tions between universities and industry; ways to encourage foreign graduate students to stay in this country once they have completed their studies.

Committee Publication Numbers 98–94 and 98–DD

3.1(I)—Supercomputer Use in Scientific and Technological Research

Background

As part of a broad effort to review information technology research and development and policy, the Committee on Science and Technology conducted oversight hearings to better understand the contribution of supercomputers to science and society and to determine the appropriate Federal initiatives necessary to continue U.S. preeminence in the field of supercomputers. Three areas of concern regarding supercomputer use and development have been identified: supercomputer access for scientific researchers, the Government's need for supercomputing, and long-term research and development efforts.

Other countries, including Great Britain, France, and Japan, recognized the importance of information technology, and in particular the increasing need for supercomputers, and developed national programs to stimulate development. Critics contend that the lack of a coordinated response to foreign efforts could have serious negative consequences for the computer industry, and thus possibly for the nation's security and continued leadership in scientific research.

Summary of hearings

On November 15 and 16, 1983, the Committee on Science and Technology held hearings to review current challenges to the U.S. lead in advanced computer technology and the importance of supercomputers to industry and the advancement of science. The hearings revealed that many forefront research problems, ranging from seismic data analyses to determine oil drilling sites to the design of integrated circuits for the electronics industry, cannot be solved without the aid of supercomputers. Two major problems concerning the use, availability and future development of supercomputers were identified: access to supercomputers by important segments of the research and defense communities is inadequate; current plans for supercomputer development can only achieve a fraction of the capability and capacity technically achievable in this decade.

Witnesses were in general agreement that: the Federal government should take action to provide access to supercomputers for government funded researchers in government laboratories, universities, and other institutions having large scale computational needs; the U.S. should not relinquish its lead in supercomputer technology; and a continuing Federal interagency group should be designated to provide coordination among agencies to ensure appropriate sharing of resources, avoid duplication of effort, and maintain a dialogue at both the policy and technical level.

Committee Publication Number 98–47.

3.1(J)—Emergency Mathematics and Science Education

Background

During the past several years the Committee on Science and Technology has been made increasingly aware of problems in the nation's ability to provide trained and technically skilled personnel necessary to continued national economic strength and vitality. Specific areas of concern include: a decrease of engineering faculty with concurrent increase in engineering enrollment; a decline in the quality and quantity of new graduate engineers and researchers; a decline in the number of science and mathematics teachers at the secondary level; a long-term decline in secondary level scientific literacy and an increased need for skilled technicians in various high technology fields.

Summary of hearings

The Committee held hearings on February 9 and 16, 1983, and witnesses included Members of Congress, representatives of the academic community, representatives of industry and professional associations. The result of the hearings was legislation (H.R. 1310) which was reported by the Committees on Education and Labor and Science and Technology, and was enacted into law on August 11, 1984 (P.L. 98-377).

Committee Publication Number 98-99.

3.1(K)—A Review of the Scientific and Technological Issues in the Regulation of Cotton Dust in the Primary Cotton Textile Industry

As a result of a hearing held in the 97th Congress, the Subcommittee on Investigations and Oversight prepared a report titled "A Review of the Scientific and Technological Issues in the Regulation of Cotton Dust in the Primary Cotton Textile Industry". On May 10, 1983, the Committee on Science and Technology approved and adopted the report which concludes that there is no credible new data to support a relaxation of the cotton dust exposure standard established by the Occupational Safety and Health Administration of the Department of Labor.

On May 24, 1983, the report was filed in the House (H. Rept. 98-215).

3.1(L)—Review of the Scientific Basis of the Environmental Protection Agency's Carcinogenic Risk Assessment of Formaldehyde

Following hearings in the 97th Congress, the Subcommittee on Investigations and Oversight prepared a report titled "A Review of the Environmental Protection Agency's Carcinogenic Risk Assessment of Formaldehyde", which was approved and adopted by the Full Committee on May 10, 1983. The report is critical of the Environmental Protection Agency's lack of peer review in its risk assessment on formaldehyde.

On May 24, 1983, the report was filed in the House (H. Rept. 98-216).

3.1(M)—Consequences of Nuclear War on the Global Environment

Following a hearing in the 97th Congress, the Subcommittee on Investigations and Oversight prepared a report titled "The Consequences of Nuclear War on the Global Environment". On July 26, 1983, the Committee on Science and Technology approved and adopted the report. The report addresses the question of whether the Earth would be habitable after a nuclear war and stresses the need for a coordinated research effort in order to better understand the consequences on the environment of nuclear war.

On August 3, 1983, the report was filed in the House (H. Rept. 98-344).

3.1(N)—The Impact of Mercury Releases at the Oak Ridge Complex

Background and summary of hearing

In 1983, testing revealed unusually high ambient levels of mercury in the waters of East Fork Poplar Creek and on the grounds of the Y-12 nuclear weapons plant in Oak Ridge, Tennessee. Because of concern about the possible health and environmental impacts of the spilled mercury, the Subcommittee on Energy Research and Production and the Subcommittee on Investigations and Oversight held a joint hearing on July 11, 1983 in Oak Ridge to investigate the extent of the mercury contamination, the status of cleanup efforts, and the potential problems with other contaminats at the Oak Ridge Complex.

Mercury releases occurred during the period from 1950 to 1963 at the Department of Energy weapons facility in the Oak Ridge Complex. Because of the national security aspects of the work at the Y-12 facility, the Oak Ridge community was unaware of the magnitude of the overall mercury release until certain data was made public early in 1983. It also appeared that waste management practices at the Y-12 plant posed significant health hazards in addition to potential impacts from the mercury contamination. The Subcommittees were concerned with the reasons for the delay in informing the local community of potential problems from the spills and the implications of the Y-12 waste management practices. During the hearing, testimony was received from federal, state, and local officials, as well as concerned citizens from the Oak Ridge area.

During the hearing, the Subcommittee stated concerns about whether the hazards posed by the pollution represented a danger to human health; whether the DOE and its contractor, Union Carbide, acted responsibly in identifying problems and making information public; the best way to ensure that data collection on contamination would continue; and what remedial actions needed to be taken.

In the report based on the hearing (H.Rpt. 98-558), the Subcommittees recommended that the Congress provide adequate support, both budgetary and oversight, to assure environmental cleanup efforts at Oak Ridge can be implemented and proceed in a timely manner. The Subcommittees were encouraged by the recent actions taken by the Oak Ridge Operations Office and recommended that

DOE should seek independent scientific assistance in all phases of monitoring and cleanup of the Complex so that environmental problems could be resolved and also proceed in a manner free of legal disputes over jurisdictions. The Subcommittees concluded that progress was being made and that DOE appears to be taking the proper course of action.

Committee Publication Number 98-44.

3.1(O)—Structural Failures

Beginning in the 97th Congress, the Committee began a lengthy study of structural failures in major buildings and structures. In addition to two hearings in the 97th Congress, the Subcommittee on Investigations and Oversight held a further hearing on April 25, 1984. The purpose of the study was not to pinpoint blame for individual incidents of failures, such as the one which occurred at the Kansas City Hyatt Regency Hotel, but to discuss if there were generic problems in the architectural and construction industries that led to what appeared to be a large number of failures, and to examine how such deficiencies could be corrected.

While a mulitiplicity of suggested problems were identified in a survey of relevant leading professionals, six principal factors were identified by consensus. One, there is a lack of communication and organization between the various professionals that contribute to the construction process, ranging from the architect to the building inspector. Two, the structural engineer rarely has any overseeing role in the construction of a building of his or her design. Three, financial pressures in recent time have sped up the process of construction at the expense of quality. Four, structural connections, such as joints in bridges, are not part of an integrated original design, but are designed on site, on an ad hoc basis. Five, selection of architects and engineers is often made on a low-bid basis, with quality and skill not receiving the priority it should as a selection criterion. Finally, there is a lack of a central body to investigate failures, and a corrollary lack of a central repository for banking data on the causes of these failures. Combined with the fact that causes of these failure are often legally sealed as part of litigation settlement, the architecture, engineering and construction professional communities are severely hampered in their ability to learn from past mistakes.

In an effort to alleviate the problem of the lack of an investigatory body and a central repository for data on structural failures, an amendment to the National Bureau of Standards authorization bill for FY 1985 (H.R. 5172) was adopted, which would empower the Bureau to conduct investigations and maintain a repository.

On March 8, 1984 the Committee on Science and Technology approved and adopted the report titled "Structural Failures in Public Facilities." On March 15, 1984, the report was filed in the House (H. Rept. 98-621).

Committee Publication Number 98-82.

3.2—The Subcommittee on Energy Development and Applications

3.2(A)—Lower Oil Prices: Implications for Energy R&D Policy

On June 22, 1983, the Subcommittee on Energy Development and Applications held a hearing on lower oil prices and their implications for energy research and development policy. The purpose of this hearing was to examine long-term energy supply and demand and price projections, various modeling techniques, and their impacts on the development of future Federal Government policy relating to energy research and development. Testimony was received from Federal Government witnesses, the International Energy Agency, and various industrial and academic representatives.

The Department of Energy testified that by 1990, current oil price projections range from $28 per barrel in the low case to $48 per barrel in the high case—a substantial range of uncertainty. The Department also indicated that, while some increase in foreign oil imports was to be expected as the economy grew in the future, its low world oil price case projected imports at 8.7 million barrels per day in 1985 and 9.5 million barrels per day in 1990. Other witnesses also suggested that there would be a gradual tightening of the energy and oil markets near the end of this decade. A number of recommendations were made during this hearing, such as concentrating Federal Government funding support on research activities and leaving commercialization activities to the private sector, balancing the distribution of funding among the different fields of energy research in a more equitable manner, and examining the DOE energy R&D program more fully in the context of a unified federal R&D budget.

Committee Publication Number 98-27.

3.2(B)—Tax Incentives for New Energy Technologies

On July 12 and 21, 1983 the Subcommittee continued its oversight hearings on the role of tax incentives in stimulating the development and commercialization of new energy technologies. These hearings focused on developments following the introduction of H.R. 1775, co-sponsored by Chairman Don Fuqua and Congressman Manuel Lujan, Jr. and on the consideration of biomass, cogeneration, and synthetic fuel technologies. Witnesses during these two days included Senator Spark Matsunaga (D-HI), several industrial and utility organizations, and various financial and energy policy representatives.

In general, the testimony indicated that there was a strong need to extend the current energy tax incentives for renewable energy systems. Without this extension, commercial progress in developing

and utilizing these resources would be slowed or terminated. Some witnesses suggested that the most effective energy policy would be to extend the expiration date and adjust the percentage levels for the existing tax credits to correspond to the degree of development of the various technologies, expand the energy tax credits to cover synthetic fuels projects and cogeneration facilities, and increase utility involvement in renewable and alternative energy technologies by extending the current tax incentives to utility companies. Following these hearings, the Committee sent a compilation of the testimony and related documents to the Ways and Means Committee for its consideration.

Committee Publication Number 98-26.

3.2(C)—Status of Synthetic Fuels

Since the passage of the Energy Security Act and the establishment of the Synthetic Fuels Corporation (SFC) in 1980, the development of commercial size synthetic fuels facilities has been delayed. Lower oil prices, lower demand for energy, and organizational problems within the SFC have led to a reassessment of the need for such facilities. In late May, 1984, the President submitted legislation proposing the rescission of $9 billion of the approximately $16 billion in funds originally allocated to the SFC and also proposing that no projects be supported whose products would cost significantly more than market prices. This action took place concurrently with the loss of sufficient SFC board members to constitute a quorum.

The Subcommittee held a hearing on June 6, 1984 to review the status of synthetic fuels, and heard as witnesses Members of Congress, DOE officials, and SFC officials. Some witnesses suggested that facilities which "bridge the gap" between small scale R&D and the commercial size facilities sponsored by the SFC are needed, and that such facilities could be funded from amounts presently allocated to the SFC. Others were concerned that reductions recommended by the Administration would not allow sufficient funds for a comprehensive commercial scale development program in the SFC. There was a consensus that Congressional action was necessary to modify the funding and possibly the direction of the SFC before the President appointed members to the SFC board in order to reconstitute the quorum required for its operation.

Committee Publication Number 98-106.

3.2(D)—Cost-Shared Energy Facilities and Projects

The Subcommittee held hearings on June 6, 7, and 13, 1984, to determine the need for Federal cost-sharing on intermediate or pre-commercial scale energy facilities and projects in non-nuclear energy. The hearings were motivated by a growing perception that a gap exists in the DOE energy technology programs between research and development and commercialization. Many promising new energy technologies are experiencing difficulties making the transition from small scale research and development to the commercial marketplace. To ease that transition some experts have indicated that Federal cost-sharing on larger scale pilot plants, demonstrations, or systems tests would be helpful. The hearing exam-

ined the merits of such cost-sharing and possible mechanisms for implementing a program of cost-shared energy facilities and projects. There was general agreement on the need to strengthen the partnership between the Federal government and industry in the commercialization of new energy technologies. Witnesses included Members of Congress, the Assistant Secretaries for Fossil Energy and Conservation and Renewable Energy from DOE, officials from EPRI and GRI, and other private sector witnesses.

Committee Publication Number 98–106.

3.2(E)—Acid Rain: Implication for Fossil R&D

Acid rain has emerged as one of the most visible environmental policy issues of the 1980's. Pressures to control acid rain have increased significantly over the past several years for two substantive reasons. First, there is a growing debate over whether acid rain threatens ecosystems over a far broader geographic range than the Northeastern United states. Secondly, questions are being raised about the impact of acid rain on agricultural crops and forests, soil productivity, materials and structures, and human health. There is little agreement however, on which combination of developed and developing technologies might be used to control the emissions which are believed to be responsible for acid rain.

The Subcommittees on Energy Development and Applications and Natural Resources, Agriculture Research, and Environment held hearings on September 13 and 20, 1983 to assess the implications of acid rain on fossil energy research and development. The hearings had four objectives:

(1) To determine the state of knowledge of the causes, effects, and control of acid deposition;

(2) To review the status of current research programs and plans in these areas;

(3) To review the Administration's proposals for addressing the acid rain issue; and

(4) To address the ways in which development and developing control technologies might be used, in a cost-effective manner, to effect reductions which may be mandated in sulfur and nitrogen emissions.

The first day of hearings focused on the state of knowledge of the causes and effects of acid rain. Witnesses presented the latest findings of the National Acid Precipitation Assessment Program, an interim report of the Office of Science and Technology Policy Acid Rain Peer Review Panel, and the National research Council's report on acid deposition. There was a general consensus that the vast majority of the undesirable acidic end products of wet and dry deposition—sulfates and nitrates—is derived from the combustion of fossil fuels, which releases sulfur dioxide and nitrogen oxides into the atmosphere. There was also agreement that much more research needs to be done. There was less agreement, however, on the appropriate steps to take to control acid rain at this time.

Industrial, utility and government witnesses appeared at the second day of the hearings to discuss the status of their current research programs and plans in acid rain research, and how new control technologies might be used to reduce emissions of sulfur and

nitrogen. Advances in coal cleaning, atmospheric fluidized bed combustion and flue gas desulfurization technologies, in particular, were emphasized as offering the potential to greatly reduce emissions. As was the case with the first day's witnesses, there was a consensus that much more research is needed.

Committee Publication Number 98-75.

3.2(F)—Energy and Rural Development

Rural economic development depends vitally on adequate, reliable energy supplies, and rural areas often have unique problems in meeting their energy requirements. They are frequently located far from conventional energy sources, leading to higher costs and greater likelihood of interruption. They are heavily oriented toward farming, and energy intensive industry which requires new technologies to mitigate the problems associated with increasing cost and decreasing availability of fossil fuels. These concerns led the Subcommittee to hold a hearing on "Energy and Rural Development: What is Needed, What is Being Done" on April 15, 1983, in conjunction with an alternative energy conference and exposition at Chippola College in Marianna, Florida. The workshop featured the Lieutenant Governor and energy and evironmental officials from the State of Florida, which has long been a leader in promoting energy efficiency and increasing utilization of renewable resources. Witnesses from the U.S. Department of Energy, the University of Florida, and the Tennessee Valley Authority discussed programs sponsored by those organizations to develop biofuels and other renewable resource based technologies for rural applications.

Committee Publication Number 98-14.

3.2(G)—Indoor Air Quality Research: Current Status and Future Needs

Indoor air quality became a national concern when it was learned that reduced air infiltration could lead to unacceptably high levels of indoor pollutants such as radon, formaldehyde, asbestos, combustion products and tobacco smoke. Researchers determined that exposures to indoor contaminants were in many cases orders of magnitude higher than comparable exposures to outdoor pollutants. Several agencies have research programs in indoor air quality, including the Department of Energy, the Environmental Protection Agency, the Consumer Products Safety Commission, and the National Center for Disease Control. However, a plan to develop a coordinated interagency program in this area, proposed in 1980, was never implemented.

On August 2, and 3, 1983, hearings were held by the EDA and NRARE Subcommittees to review the problems associated with indoor air quality, examine the status of current scientific knowledge, assess future research needs, and promote greater cooperation between EPA and DOE in this area. Witnesses included researchers from universities and national laboratories and officials from the principal agencies funding indoor air quality research. The researchers recommended greater efforts to characterize indoor air pollution sources; define indoor air contaminant concentrations in the existing housing stock; determine the level of expo-

sure to indoor pollutants in the national population; obtain more accurate information on the health effects of indoor pollutants; and examine mitigation strategies. EPA officials expressed support for Committee efforts to have that agency take the lead in indoor air quality research.

Committee Publication No. 98-54.

3.2(H)—Prospects of the U.S. Photovoltaics Industry

In connection with its oversight responsibilities, the Subcommittee held hearings on September 11, and 19, 1984 on the current state and future prospects of the U.S. solar photovoltaics industry. These hearings were held in order to investigate concerns about the current and near-term future health of this industry in light of recent economic setbacks. In addition, the Subcommittee examined the need for various incentives to encourage private industry to invest in production facilities for state-of-the-art photovoltaics technologies and the implementation of recent photovoltaics-related Congressional initiatives.

During these two days of hearings, testimony was received from Members of Congress, several Federal Government agencies, and a wide range of industrial representatives. Generally, the industrial witnesses strongly reiterated the need to extend the current renewable energy tax incentives due to expire at the end of 1985. In addition, a number of federal approaches were recommended that could assist the domestic industry in marketing photovoltaic systems in foreign countries.

Committee Publication will be available.

3.2(I)—Building Energy Research Workshops

On January 12-14, 1983 the Committee held a workshop on Building Energy Research (BER) at the Carmel Valley Inn in California, which is co-sponsored with the U.S. Department of Energy, the Electric Power Research Institute (EPRI), the Gas Research Institute (GRI), the National Association of Home Builders Research Foundation (NAHB/RF), the American Institute of Architects (AIA), and the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE). The objective of the workshop was to formulate a national agenda for research in every efficiency and solar energy related to buildings. Fifty-six participants representing the private sector, the government and national laboratories, universities, and public interest groups attended the workshop. They identified sixty-five research tasks in areas such as component and subsystem research, whole building performance research, and behavioral and institutional factors. The workshop is widely regarded as a landmark in creating greater interaction between the building industry and the government in planning and implementing the DOE conservation and solar buildings programs.

On December 5-7, 1983 the Committee held a follow-up workshop on Building Energy Equipment Research with ASHRAE, DOE, NAHB/RF, and AIA as co-sponsors, and EPRI and GRI as participants. The purpose of this workshop was to examine the current status and future needs for research related to heating, cooling and lighting equipment and active solar energy systems, which were

not covered at the previous meeting. Fifty-one experts from the building equipment and solar energy industries, their trade associations, the national laboratories, public interest groups, private sector research organizations, and federal agencies worked together to assess the state of the art in building equipment research and to develop a statement of findings and recommendations.

Committee Publications Numbers 98-G and 98-Z.

3.2(J)—*Ocean Thermal Energy Conversion*

The Committee has long been concerned about the status and direction of the Federal OTEC program. In 1980 the Committee sponsored and secured passage of the Ocean Thermal Energy Conversion Research, Development and Demonstration Act (P.L. 96-310) which directed DOE to develop two OTEC demonstration facilities with a combined capacity of 100 megawatts by 1986. Budget reductions and Administration opposition to Federal demonstrations have made that goal unrealizable, and also raised the question of the desirability of continuing the OTEC programs. In early 1983 the Committee asked OTA to prepare a report on the status of OTEC development, current economics, and likely future markets. Following release of the report in January 1984, the Committee and OTA co-sponsored a workshop on Ocean Thermal Energy Systems to recommend future directions for the DOE program. There was general agreement that continued Federal involvement in OTEC R&D at a modest ($4-$6 million/year) level is justified; that the research should be directed at long-term needs and generic, high risk problems; and that a modest-sized test facility with a cold water pipe capable of pumping deep ocean water to a shore laboratory should be maintained.

OTA Staff Paper, Review of Ocean Thermal Energy Systems, January 1984. (Available from the Office of Technology Assessment.)

3.2(K)—High Energy Physics Facilities

In July 1983, the Department of Energy's High Energy Physics Advisory Panel (HEPAP) endorsed a report of its Subpanel on New Facilities for the U.S. High Energy Physics Program. The subpanel, chaired by Dr. Stanely G. Wojcicki of Stanford University, made a number of recommendations which, if implemented by the DOE, would have far reaching consequences for the current program. In particular, the Subpanel recommended that the Colliding Beam Accelerator (CBA), (also known as ISABELLE) under construction at Brookhaven National Laboratory be cancelled. Also, the Subpanel called for the immediate initiation of a multi-trillion-electron-volt (TeV) proton-proton collider project, the Superconducting Super Collider (SSC), "with the goal of physics experiments at this facility at the earliest possible date." The HEPAP endorsement of the recommendation to cancel CBA represented a reversal of the high energy physics community's past support. As recently as January 1982, the HEPAP Subpanel on Long Range Planning for the U.S. High Energy Physics Program, chaired by Dr. George H. Trilling of the University of California at Berkeley and the Lawrence Berkeley Laboratory, endorsed the completion of the CBA by the end of

this decade as an essential element "for a healthy, albeit lean U.S. program in high energy physics."

The Subcommittee held a hearing on October 19, 1983 with two principal objectives:

(1) To review the findings and recommendations of the July 1983 report of the Department of Energy's High Energy Physics Advisory Panel (HEPAP) Subpanel on New Facilities for the U.S. High Energy Physics Program; and

(2) To receive the Department's response to these findings and recommendations.

Witnesses representing the High Energy Physics Advisory Panel and its Subpanel on New Facilities cited several arguments to support the recommendation that CBA be cancelled. The basic theme of all these arguments was that due to experimental and theoretical advances in recent years, there would be limited opportunity to investigate new and important physics issues at the facility. Rather, it was argued, a leap to a multi-TeV facility was needed if the U.S. physics program was to be in the forefront of the field at the turn of the next century and that the SSC represented such a step. The Department of Energy announced its decision to cancel the CBA, and to initiate advanced accelerator R&D preliminary to a future multi-TeV high energy physics facility.

Committee Publication Number 98-55.

3.2(L)—Computers and Their Role in Energy Research: Current Status and Future Needs

The Department of Energy and its predecessor agencies, the Energy Research and Development Administration and the Atomic Energy Commission, historically have been major forces in the development of high speed computers. The primary thrust of this development, however, has been associated with the weapons laboratories, Therefore, the advantages of state-of-the-art computational facilities are not equally available for all researchers supported by the DOE. These researchers, at the National Laboratories and at universities, address both fundamental energy science problems and mathematical problems underlying development and use of the next generation of supercomputers.

The Subcommittees on Energy Development and Applications and Energy Research and Production held joint hearings on June 14 and 15, 1983 to address three questions:

(1) To what extent should state-of-the-art computers be made available to energy science researchers at the National Laboratories and universities?

(2) What role can the DOE play as a buyer and/or developer of technology for the next generation of computers?

(3) How should DOE interact with the private sector?

On the first day of hearings, government and industrial policymakers emphasized the importance of maintaining our lead in computer technology to the United States economy and to the national well-being in general. Government witnesses also described their current research programs designed to enhance the power of the current generation of computers, as well as their plans to make more supercomputer time available to university and National

Laboratory researchers, while industrial witnesses described their latest product developments.

Witnesses on the second day of hearings came from the National Laboratory and university communities. There was convincing testimony that access to state-of-the-art supercomputers is severely limited for university and non-weapons laboratory energy science researchers, and that this lack of access is hampering advances in a number of scientific areas.

Committee Publication Number 98-20.

3.2(M)—Conversion of Research and Test Reactors to Low-Enriched Uranium

The Subcommittee on Energy Development and Applications and Energy Research and Production held a joint hearing on the subject on September 25, 1984. For further information please refer to the Subcommittee on Energy Research and Production Section 3.4(N) of this report.

Committee Publication will be available.

3.3—The Subcommittee on Natural Resources, Agriculture Research and Environment

3.3(A)—Commercialization of Meteorological and Land Remote-Sensing Satellites

During 1983, the Subcommittee on Natural Resources, Agriculture Research and Environment and the Subcommittee on Space Science and Applications conducted seven hearings on the topic of commercialization of meteorological and land remote-sensing satellites (April 14, June 21 and 28, July 14 and 21, November 8 and 9, 1983).

The first of these hearings was an investigation of the activities of the Administration, particularly the Department of Commerce, in commercializing land and weather satellites. At that hearing, Secretary Baldrige revealed that his Deputy, Guy W. Fiske, had recused himself from further involvement in the commercialization issue because of Fiske's relationship with the Communications Satellite Corporation (COMSAT). COMSAT has generally been credited with originating the concept of turning both the land and weather satellites over to the private sector.

Subsequent investigation by the Subcommittee revealed that Mr. Fiske had discussed, personally and through an intermediary, high-level employment opportunities with COMSAT at a time when COMSAT was attempting to take over the satellite systems and when Fiske was substantially involved in the commercialization issue. Shortly before a scheduled appearance by Mr. Fiske before the Subcommittee, he resigned his position as Deputy Secretary of Commerce. Nine days later, on May 23, 1983, Mr. Scheuer forwarded a summary of the Subcommittee's investigative findings to the Department of Justice.

Beginning with the June, 1983 hearings, the Subcommittees' efforts turned to development of legislation to guide the commercialization process. Language had been adopted in Title II of P.L. 98–52, the FY 1984 authorization for NASA, that laid the groundwork for Congress to formulate policies and procedures to guide the commercialization process. During the June and July hearings, the Subcommittees obtained testimony from a broad array of witnesses, including Administration representatives, economists, Landsat data users, and private-sector parties who might have an interest in becoming Landsat operators.

During the first five hearings, testimony was heard on commercialization of both Landsat and weather satellites. The decision to consider commercialization of weather satellites stirred considerable controversy because this system affects the safety of lives and property, and because the Federal Government uses as much as 95% of the data generated. (On the other hand, the government represents 25% of the Landsat data market.) During the hearings,

the Subcommittees heard overwhelming evidence that the weather satellite system should continue to be operated by the Federal Government. Subsequently, the decision to seek commercialization of weather satellites was reversed.

The hearings focused as well on issues surrounding the commercialization of Landsat, including the size of the data market and data continuity, national security considerations, foreign relations with nations who use or will be using Landsat data, the Request-for-Proposal (RFP) process, anti-trust considerations, the nature of the Federal role after transfer, and the need for Congressional oversight. The hearings held in June and July served to clarify these issues and led to the drafting of legislation.

Further hearings were conducted on November 8 and 9, 1983, to take testimony on a draft bill entitled, "The Land Remote-Sensing Commercialization Act of 1983". The draft bill set the policies, procedures, conditions and limitations that were envisioned in Title II of P.L. 98-52 by addressing data continuity, data quality, "open skies", and national security considerations. H.R. 5155, the bill that resulted from this draft legislation and that ultimately became P.L. 98-365.

On March 6, 1984, the Subcommittees reviewed H.R. 4836, the "Land Remote-Sensing Commercialization Act of 1984". Testimony from the Department of Commerce's Source Evaluation Board on Civil Space Remote Sensing served to clarify the Administration's position on various points in the bill. The hearing took place when the Source Evaluation Board was preparing to receive bids from private firms to commercialize Landsat, and the Subcommittees and the Source Evaluation Board took the opportunity to coordinate their activities so that the requirements of the bill and of the RFP would be similar.

Committee Publication Numbers 98-53, 98-74.

3.3(B)—Agricultural Weather Services

Background

Agriculture weather services constitute only a tiny fraction of the vast Federal budget. In 1983, approximately $1.5 million has been budgeted by the National Weather Service to provide farmers in over 40 States with information needed to irrigate crops, to protect them from frost, and to plant, fertilize, spray, and harvest at the optimal time. For the past 4 years, the Administration has proposed eliminating all agriculture weather services on the grounds that they are "specialized" for a narrow interest group, and that the private sector could easily provide agricultural weather services should the government withdraw from the field.

Summary of hearing

The Subcommittee convened a hearing on March 31, 1983 in West Palm Beach, Florida to examine the impact of the proposed reductions on the users of agricultural weather services. Testimony was heard from Representatives of the Florida Department of Agriculture, private weather services, the National Weather Service, and from a panel of fruit, vegetable and citrus growers from south central Florida.

The Subcommittee found that the provision of agricultural weather services is a cost effective use of federal dollars. According to the witnesses at the hearing, without the specialized services, crop losses could easily reach hundreds of millions of dollars. This would have a detrimental impact on the industry, the local economy and the American consumer. The Subcommittee agreed that the services should be continued and provided funding for agricultural weather services in the NOAA Authorization Bill.

Committee Publication Number 98-66.

3.3(C)—Man and the Biosphere Program

On April 15, 1983, the Subcommittee held a hearing on the U.S. Man and the Biosphere Program.

The objectives of the hearing were to examine the current status and future direction of the U.S. Man and the Biosphere Program, and to receive an informal program report from the appropriate United Nations officials on the Man and the Biosphere Program.

The Man and the Biosphere Programme (MAB) is an international programme of research and training. Its aim is to provide scientific knowledge and trained personnel needed to manage natural resources in a rational and sustained manner. Thus, MAB is studying not only the impact of man on the environment, but also the repercussions of environmental modifications on man. MAB was begun in 1971 by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

The hearing focused on research under the MAB Programme that was designed to help provide the information needed to solve practical problems of resource management. Until now, a great amount of research on the natural environment and resources has not been relevant to practical management problems. Often the focus has been too sectoral and results have not been applicable to other ecological or socio-cultural circumstances. By co-operating through MAB, government planners, scientists and managers can obtain fresh insights which will help them in making resource management decisions.

The hearing witnesses included representatives of the Departments of State, Agriculture and Interior, scientists, and environmental organizations.

The witnesses agreed that the U.S. Man and Biosphere Program is very beneficial to the citizens of the United States as well as to scientists in cooperating countries. However, because the level of funding for the U.S. MAB program is so small, the level of research effort is limited. Even so, the money is used to raise additional funds.

Committee Publication Number 98-60.

3.3(D)—Hazardous Waste Research and the Stringfellow Acid Pits

Background

The Stringfellow Acid Pits are located in Glen Avon, California. This hazardous waste landfill was operated from 1955 to 1972 during which time an estimated thirty-two million gallons of waste

were disposed in open, unlined ponds by steel and aluminum firms, the aerospace industry, plating firms and chemical manufacturers. Hazardous materials deposited at Stringfellow include strong acids, heavy metals, and DDT. Wastes have leached into groundwater streams, and the site experienced surface discharges in 1969 and 1978 following heavy rains. Discharges have been linked to soil contamination several miles downstream.

The Stringfellow site is one of the top 50 sites nationwide listed by the Environmental Protection Agency eligible for clean-up funds under the Federal Superfund program. The State of California has already spent more than $4 million on interim abatement measures. These included the placement of a clay cap over the pits, runoff abatement measures, interceptor wells, and off-site disposal of wastes. Recently, erosion of the clay cap has been discovered and carcinogenic chemicals have been identified in monitoring wells downstream from the site.

A final solution to clean-up of the Stringfellow Acid Pits, however, has yet to be determined. Moreover, the degree to which this and other similar sites present community health and environmental problems is unknown and questions remain about how best to clean up such sites.

Summary of hearings

On April 22, 1983, the Subcommittee held a hearing in Glen Avon, California, on the Stringfellow Acid Pits. The objectives of this hearing were:

(1) To examine the health effects associated with hazardous waste dump sites and clean-up options and technologies for such sites;

(2) To evaluate the adequacy of the U.S. Environmental Protection Agency's research activities in addressing long-term clean-up of hazardous waste dump sites eligible for remedial action under the "Superfund" program;

(3) To examine the interaction between the States and the Federal Government in determining appropriate methods for use in the clean-up of hazardous waste dump sites using the State of California and Stringfellow Acid Pits as an example; and

(4) To obtain information that will lead to appropriate research on hazardous waste and to more appropriate legislation and implementation thereof.

The hearing revealed a glaring lack of knowledge on the health effects of hazardous waste and on effective methods for cleaning up waste sites. Moreover, government sponsored research into these questions appear to be minimal.

Committee Publication will be available.

3.3(E)—Hazardous Waste Management

On May 16, 1983, the Subcommittee held a field hearing in Tallahassee, Florida, on hazardous waste management.

The objectives of the hearing were to examine the role of state and local governments in the overall effort to regulate hazardous waste; to explore the various options for the location of hazardous

waste management facilities; and to review the impact of regulatory exemptions for small quantity hazardous waste generators.

The State of Florida contains twenty-five abandoned or closed hazardous waste dump sites eligible for cleanup under the federal "superfund" law. Only three other states contain more sites of this nature. Moreover, the Environmental Protection Agency (EPA) has found at least 15,000 hazardous waste dump sites across the Nation and many of these were found in Florida. One such site, currently being investigated, is located in Fairbanks.

Hazardous waste management is not just a problem involving abandoned or closed sites, because these wastes are currently being produced. EPA has estimated that Florida generates almost one million tons of hazardous waste annually.

In order to implement effective measures to improve Federal and state programs, it is essential to fully understand the circumstances facing both the regulators and the regulated community. In addition, the issues concerning the small quantity generator exemption and the siting of hazardous waste management facilities need to be understood and resolved. The problems resulting from hazardous waste mismanagement and the problems associated with hazardous waste regulation are similar across the individual states. In many of the sunbelt states, population growth is high and economic profiles are such that hazardous waste generators tend to be generally smaller; hence, a larger number of generators are subject to the small quantity generator exemption. In addition, these sunbelt states generally have environments and older populations that are both relatively more vulnerable to the adverse impacts of hazardous waste mismanagement. The hearing examined these and related issues.

The hearing witnesses included representatives of Florida state and local governments, the EPA, environmental organizations, private citizens and scientists.

Most of the witnesses testified that there needs to be a better system of communication between the various levels of government regarding proper disposal of hazardous wastes. The Federal and state governments, who are primarily responsible for hazardous waste enforcement, need to begin programming to educate individuals and local governments on how to resolve problems of disposal before they adversely effect human health and the environment.

Committee Publication Number 98–96.

3.3(F)—Environmental Monitoring Improvement Act of 1984 (H.R. 5958)

To provide for improvements in the Nation's environmental monitoring programs, to establish a National Commission on Environmental Monitoring, and to enhance United States participation in international monitoring programs.

Summary and background of legislation

Environmental monitoring is essential to the implementation of all major environmental statutes and is a key to the detection of future problems. Despite statutory requirements, Congressional oversight, and many existing monitoring programs, however, the

nation still lacks an adequate national environmental monitoring program. While much environmental monitoring is taking place, the present system is an ad hoc collection of diverse programs conducted by many agencies at different levels of government. Critics suggest that the programs continue to suffer from fragmentation, poor quality assurance, lack of data, and an absence of policy direction and goals.

H.R. 5958 establishes a temporary National Commission on Environmental Monitoring to identify priorities for environmental monitoring data and to recommend specific changes for improving coordination among monitoring agencies and the quality and comparability of monitoring data. It also requires the Environmental Protection Agency to submit an annual report to Congress and the Council of Environmental Qualify for the Council's use in preparing its annual Environmental Quality Report. In addition, the report would discuss the progress being made in implementing the Commission's recommendations and update the inventory of environmental monitoring programs.

Legislative history

H.R. 5958 was the result of two sets of hearings before the Subcommittee on Natural Resources, Agriculture Research and Environment. The first set of hearings, held on May 19, May 26 and June 2, 1983, reviewed monitoring programs relating to air, water, and groundwater pollution and attempted to identify problems and make recommendations that would lead to improvements in environmental monitoring. On the basis of those hearings, a draft bill was prepared and was the subject of comment at the second set of hearings on March 28, 1984. Following those hearings, minor changes were made in the draft bill and the Subcommittee Chairman introduced it as H.R. 5958 on June 28, 1984. The bill was referred jointly to the Committee on Merchant Marine and Fisheries and Science and Technology.

Committee Publication Number 98-70.

3.3(G)—Briefing on Hazardous Waste Sites in Bergen County, New Jersey

Background

The Subcommittee has a continuing concern over the increasing threat on health and the environment posed by the disposal of the Nation's hazardous waste.

The Federal Government initially responded to the critical hazardous waste problem in 1976 with the enactment of the Resource Conservation and Recovery Act (RCRA). More recently (1980), Congress enacted the Comprehensive Environmental Reponse, Compensation and Liability Act, better known as "Superfund", to deal with the release of hazardous substances in spills and from inactive and abandoned disposal sites. Successful implementation of both RCRA and the Superfund legislation requires major research and development efforts to assure that the Agency's regulatory and enforcement activities can be adequately carried out. Moreover, the EPA and Congress must have a valid awareness of concerns of citizens

threatened by hazardous waste in order to derive effective remedial actions acceptable to communities across the Nation.

Summary of briefing

On June 3, 1983, the Subcommittee held a briefing in Hackensack, New Jersey, with Federal, State, and local officials and citizens from the community to solicit their views on hazardous waste problems and to report on actions being taken to respond to the problem. The briefing revealed a high degree of anxiety on the part of private citizens over the presence of hazardous waste. They were most concerned about the uncertainly over the health threats these toxic pollutants presented to citizens. Testimony from government witnesses revealed slow progress in better understanding of the health effects of hazardous wastes.

Committee Publication will be available.

3.3(H)—Dioxin: The Impact on Human Health

Background

Dioxin is a contaminant that is formed during the production of the herbicide 2,4,5-T, a component of Agent Orange and other chemicals such as hexachlorophene. While no human deaths have been directly linked to acute exposure to dioxin, a variety of effects has been connected with long term contamination by dioxin, such as enlarged liver, neuromuscluar effects, spontaneous abortions and chloracne. There is no cosensus among scientists and medical authorities conducting research as to the clear effects of long and short-term exposure to dioxin. In early 1983 the Subcommittee began examining the status of the scientific data on the effect of dioxin on humans and the manner in which this information is being utilized by federal agencies in setting levels of exposure.

Summary of hearings

During 1983, the Subcommittee conducted four days of hearings on health effects of dioxin (March 23, June 30, July 13 and 28). The first of these hearings focused on an investigation by the Subcommittee that led to the disclosure that the EPA Deputy Administrator, John Hernandez, had intervened on behalf of Dow Chemical Company to delete unfavorable references to that company. Specifically, a draft report of the 1981 EPA study concluded that Dow was primarily responsible for traces of dioxin found in the waterways near the company's Midland, Michigan plant. The Subcommittee received testimony from Chicago Regional Administrator Valdus Adamkus that he was pressed by Dr. Hernandez to soften the report's language. He testified that the input by Dow into the agency report occurred before the normal scientific peer review had occurred. Adamkus related that Hernandez intervened for a second time on behalf of a chemical manufacturer—F.M.C.—to alter EPA's support of a detergent phosphate ban in Wisconsin.

Officials of Dow Chemical testified that they had done nothing improper and had merely transmitted comments to EPA officials to make the report "more accurate scientifically". These officials further testified that dioxins are formed by many natural combustion processes and, therefore, the production of industrial and agricul-

tural products is not the major source of dioxin in the environment.

Dr. Hernandez, citing personal reasons, resigned from EPA on March 25, 1983.

With the hearings commencing on June 30, 1983, the Subcommittee's efforts turned to an examination of the available information on the effects of dioxin on human health; to inquire as to what dioxin health effects research is currently underway and what information this research is expected to produce; and to explore what research can be performed to provide more definitive information on the effects of dioxin on human health in a more expeditious timeframe.

The June 30 hearing focused on the impact of dioxin on human health. Representatives of the American Medical Association testified about the Association's adopted resolution that characterized the hazards of dioxin. The resolution stated that the issue of dioxin was the subject of a "witch hunt" through "hysterical" bad reporting that "ignorantly damaged" the lives of residents in contaminated areas. The witnesses testified that this reflected the opinion of several AMA delegates but was not policy. The witnesses concluded that the language was "imprudent."

Other witnesses from the Veterans Administration, National Institute of Environmental Health Services, and Center for Disease Control testified about several dioxin studies currently underway in the Federal Government. Preliminary results indicated that the full impact of dioxin on human health, while not insignificant, is not known.

On July 13, 1983, the Subcommittee received testimony from the Food and Drug Administration and the Environmental Protection Agency with respect to their ongoing dioxin research. Dr. Sanford Miller, the Director of FDA's Bureau of Food, described that agency's decision to develop "concern levels" for dioxin in edible Great Lakes fish. The FDA determined, based on their analysis and the concern for "the extremely potent toxicity of dioxin based on animal tests", that fish containing more than 50 parts-per-trillion of dioxin should not be consumed. Dr. Miller stated that this standard was developed solely for the Great Lakes and was not being applied nationwide. He recommended that additional research was necessary on human sensitivity to dioxin exposure and there was a need to develop better methods to analyze and identify dioxin in food at levels of concern.

Dr. Ronald Barnes of EPA's Office of Pesticides and Toxic Substances described the agency's history in handling dioxin contamination, the potential health effects and the areas for future research. Dr. Barnes described the factors EPA considered in developing "acceptable levels of contamination in the soil." He noted that, like FDA, EPA has no hard and fast national standard for dioxin contamination. Rather EPA makes a site-by-site decision on appropriate levels of exposure. Dr. Barnes indicated that additional research was needed, particularly on how dioxin toxicity is affected by other media and appropriate destruction and disposal techniques.

On July 28, 1983, the Subcommittee received additional testimony on dioxin health effects and solicited recommendations on areas

of research that should be pursued so that more prudent and expeditious policy decisions can be made in response to dioxin. Witnesses representing Mount Sinai School of Medicine, the National Institute for Occupational Safety and Health, the U.S. Air Force, and veterans' groups testified at the hearing. Dr. Selikoff of the Mount Sinai School of Medicine serves on the advisory committee overseeing the Air Force's "Ranch Hand" study of those exposed to the defoliant Agent Orange. Selikoff testified that these studies are excellent but they will not provide results about dioxin health effects for far too many years—perhaps as many as 20. He suggested that we have the means to perform health research that will reveal the effects on human health by studying those workers who were extensively exposed to dioxin during the manufacturing process. Indeed, NIOSH is currently conducting a study on U.S. industry workers involved in the production of compounds containing dioxin. Witnesses representing NIOSH testified that this study involves over 7,000 worker from 14 production sites. Preliminary date indicates that, of the 105 reported worker deaths from 4 industry studies, there is a more than 50-fold increase in the incidence of soft-tissue sarcoma among these workers than would normally be expected in the general population. On the basis of this preliminary data, Dr. Phillip Langrigan, Director of NIOSH's Division of Surveillance, Hazard Evaluations and Field Studies, testified that there is an "association" between occupational exposure to dioxin and the occurrence of soft tissue sarcoma. NIOSH expects the final results of their study to be available in 1985.

The Subcommittee also received testimony from Major General Murphy A. Chesney, Deputy Surgeon General, U.S. Air Force, on the first phase of the Ranch Hand Study—the epidemiologic study of personnel exposed to herbicides in Vietnam between 1961-1971. General Chesney testified that during the initial phase of the study there was no indication that Operation Ranch Hand personnel experienced any increased mortality or any unusual patterns of death in time or by cause. However, he cautioned that the fact that adverse effects have not yet been detected does not imply that an effect may not become manifest at a future time. For this reason, further analysis is being conducted and the mortality in the study population will be ascertained annually for the next 20 years. The Subcommittee also received comments from veterans' groups on the Air Force and NIOSH studies and made recommendations for further dioxin research.

Committee Publication Number 98-78.

3.3(I)—Field Meeting on Furley Hazardous Waste Landfill in Wichita, Kansas

Background

The Furley hazardous waste landfill, owned by Chemical Waste Management, was opened in 1977. Wastes dumped included mercury, paraquat, gasoline, metals, vinyl chloride, methylene choloride and others. In 1980 the owners proposed expansion of the site. However, due to pressure brought by citizens concerned with environmental contamination, the Kansas Attorney General ordered an independent test on the landfill site.

These tests indicated that some contamination of groundwater had occurred. As a result of this information, the Governor of Kansas ordered the Furley landfill closed in January 1982.

Summary of hearing

On July 30, 1983 the Subcommittee held a field meeting in Wichita, Kansas on the Furley hazardous waste landfill.

The meeting objectives were: to examine the extent of environmental contamination caused by hazardous wastes from the Furley landfill; to explore the monitoring, studies, and research needed to ameliorate or reverse the environmental contamination; and to review the actions necessary to prevent future environmental contamination by hazardous waste landfills.

The Subcommittee received testimony on the best technologies to ameliorate the existing environmental contamination and how to prevent additional contamination in the future. Another issue examined at the meeting involved the owners of the landfill, Waste Management, Inc., who proposed reopening and expanding the site.

The hearing witnesses included the owners of the landfill, Waste Management, Inc., Kansas state and local government representatives, representatives of the EPA, scientists, and local citizens.

The owners of the landfill maintained that, while it was leaking, it was not harmful to the surrounding environment. Further, they requested that the landfill be reopened. On the other hand, most of the other witnesses testified that the landfill had either harmed the surrounding groundwater and the environment or had the potential to cause irreversible damage.

Committee Publication Number 98-61.

3.3(J)—Indoor Air Quality Research: Current Status and Future Needs

For a description of the joint hearings held by the Subcommittees on Energy Research and Development and Natural Resources and Environment on indoor air quality research, refer to Section 3.2(G) of this report.

Committee Publication Number 39-54.

3.3(K)—Acid Rain: Implication for Fossil R&D

For a description of the joint hearings of the Subcommittee on Energy Research and Development and Natural Resources, Agriculture Research and Environment on acid rain, refer to Section 3.2(E) of this report.

Committee Publication Number 39-75.

3.3(L)—Field Hearing on Hurricane Alicia in Houston, Texas

Background

On August 18, 1983, Hurricane Alicia moved across the Gulf of Mexico, crossed the Texas coastline at Galveston, then passed inland, striking Houston with its worst strom in 40 years, before it was downgraded to a tropical storm.

The National Weather Service has been generally credited with providing exceptionally good forecasting of Alicia, giving two days

advance warning with adequate time for storm preparations and evacuation where it was felt advisable. First designated as a Force One hurricane (wind speeds of 74 to 95 miles per hour), Alicia was subsequently upgraded by the NWS to a Force Three Hurricane (wind speeds of 111 to 130 miles per hour) just before it reached the Texas coast. Compared with the infamous hurricane which hit Galveston and eastern Texas in 1900, killing over 6,000 people, only 16 deaths were attributed to Alicia. Though property damages from Alicia are yet to be computed, preliminary estimates indicate that total damage will exceed $1 billion, one of the most costly storms ever to hit the U.S.

Summary of hearing

The Subcommittee convened a field hearing in Houston, Texas, on September 23, 1983, to examine the following issues related to hurricane prediction:

(1) Methods recently developed by the National Weather Service to rate the intensity and landfall-probability of hurricanes;

(2) Source adequacy of weather information utilized by local officials in planning coastal evacuation and other emergency measures;

(3) Roles of both local Weather Service officials and the NOAA Weather Radio Network before, during, and after the passage of Hurricane Alicia;

(4) Dangers associated with multiple or unauthorized warnings issued by non-governmental sources during hurricanes and other severe weather occurrences; and

(5) Potential impact upon severe weather warnings of proposals to sell weather satellites and to contract out many local weather services.

Testimony was received from National Weather Service officials, local television meteorologists, mayors, and civil defense officials.

While the Subcommittee focused its attention on the prediction of Alicia and on coordination between Federal, State, and local officials and the news media during its passage, the House Committee on Public Works conducted a hearing on September 24, 1983 on the damage assessment and recovery efforts associated with Hurricane Alicia.

Committee Publication Number 98–81.

3.3(M)—Agriculture and Water Use: Present and Future Issues

Background

Agricultural productivity is dependent on the quantity and quality of water available from precipitation or irrigation. Approximately one-half of the western United States is already experiencing local and seasonal supply problems, while the east is threatened by contaminated water. The long-term productivity of arid/semiarid agricultural land areas remains questionable under current technology and Federal agricultural and water-related programs and policies. However, improved water management may compensate for decreasing availability of affordable water. A report

issued in October, 1983 by the Office of Technology Assessment on "Water-related Technologies for Sustainable Agriculture in the Arid/Semiarid West" concluded that existing and emerging technologies have potential for sustaining the long-term productivity of arid and semiarid agriculture. These technologies require integration with improved Federal policies and programs, and communication with the individual farmers.

Summary of hearing

On October 25, 1983 the Subcommittee held a hearing on present and future issues in agriculture and water use.

The objectives of the hearing were to: review water quality problems in the east and west, review existing and emerging water-related technologies in the arid/semiarid west and their ability to support long-term sustainable agriculture, and examine policy issues and options for Congress to achieve long-term productivity in the west.

Testimony indicated that major breakthroughs are possible in biotechnology with significant potential for long-term agricultural productivity, especially relating to salt tolerance, drought resistance, and efficient water use. A problem with implementing the new technologies is that specifics of each site must be well-known before an appropriate technology can be chosen, and this data base is not complete.

Interagency coordination and national coherence in water-related research may be achieved through establishment of a National Center for Water Resources Research, similar to the successful National Center for Atmospheric Research.

Committee Publication Number 98–65.

3.3(N)—Carbon Dioxide and the Greenhouse effect

Summary of hearing

On February 28, 1984, the Subcommittee on Investigations and Oversight and the Subcommittee on Natural Resources, Agriculture Research and Environment held a joint hearing on the recent information regarding carbon dioxide and the greenhouse effect.

The hearing objectives were: to examine the results of recent research into the "greenhouse effect" caused by increasing amounts of carbon dioxide and other trace gases in the atmosphere; to explore research priorities to reduce uncertainties about potential changes and their consequences; and to assess to scope and direction of the Department of Energy carbon dioxide research program.

The witnesses included representatives of the National Academy of Sciences, the Environmental Protection Agency, the Department of Energy, scientists and environmental groups.

The witnesses for the Academy and for EPA outlined the basic finding of their recent reports. All the witnesses agreed that the greenhouse effect is real and increasing. There was considerable disagreement regarding the rate of increase and the amount of time before the impact is significant.

There were several significant developments that were the focus of the hearing.

In October 1983 the EPA published a report entitled "Projecting Future Sea Level Rise", which estimated a most probable sea level rise of between 144cm and 217cm by the year 2100 due to the atmospheric "greenhouse effect" warming. The report suggested that estimates of sea level rise could be used to reduce adverse impacts and that the range of estimates could be reduced by accelerating research.

In November 1983 the EPA published a report entitled "Can We Delay a Greenhouse Warning?", which examined whether specific policies aimed at limiting the use of fossil fuels would prove effective in delaying temperature increases over the next 120 years. The report concluded that only one of the energy policies studied (worldwide taxes of up to 300% of the cost of fossil fuels) would significantly postpone a 2°C warming. Another principal conclusion was that there is major uncertainty over the growth of greenhouse gases other than CO_2 and over the temperature sensitivity of the atmosphere to charges in greenhouse gases.

Immediately after the EPA report on greenhouse warming, the National Research Council published a relatively restrained report entitled "Changing Climate". This report was in response to a congressional request arising from the debate on synthetic fuels which led to passage of the Energy Security Act of 1980.

The FY 1985 budget request for the DOE Carbon Dioxide Research Program is $13.418 million, an increase of $918,000 over the FY 1984 budget and an increase of $4,315,000 over the FY 1983 budget. Part of the increase from FY 1984 levels provides for completion of the State-of-the-Art and Statement of Findings reports scheduled for publication early in FY 1985. The increase also provides for initiating research in DOE into the effects of trace gases other than CO_2. Recent studies have indicated that these gases may be equivalent to between 50% and 100% of the CO_2 amount in the atmosphere in their "greenhouse effect."

Committee Publication Numbers 98–119 and 98–C.

3.3(O)—U.S. Withdrawal From UNESCO

Background

On December 28, 1983, the Secretary of State notified the Director-General of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) that the United States was terminating membership in the organization effective January 1, 1985. The Secretary stated that the decision had been made because UNESCO had "extraneously politicized virtually every subject it deals with; exhibited hostility toward the basic institutions of a free society, especially a free market and a free press; and demonstrated unrestrained budgetary expansion". Opponents of withdrawal, on the other hand, have argued that the organization makes a valuable contribution to world science, culture, and education, despite occasional rhetorical excesses, and despite alleged fiscal irresponsibility at the Secretariat.

The withdrawal from UNESCO science activities may be viewed as a casualty of a larger political decision and the inadequacies in other areas of UNESCO since, according to the State Department, "UNESCO science activities generally satisfy U.S. objectives and

priorities". The State Department has cited a number of UNESCO's science programs as particularly worthwhile, including the International Hydrological Program, the Man in the Biosphere Program, the International Geological Correlation Program, and the International Oceanographic Commission.

Summary of hearing

The Subcommittee held hearings on March 8, 1984 and (in conjuction with the Subcommittee on Science, Research, and Technology) on March 15, 1984 on the proposed U.S. withdrawal and its effect on international scientific cooperation. Testimony was heard from Ms. Jean Girard, the U.S. Ambassador to UNESCO, and from a variety of university scientists who have had working experience with UNESCO scientific programs.

Testimony from the Ambassador highlighted both the courses being pursued by the U.S. government and by other member nations to improve program management at UNESCO and the need for a comprehensive review or audit of alleged mismanagement of UNESCO personnel, programs administration, budgeting, and finance. In the latter regard, Mr. Fuqua and Mr. Scheuer were instrumental in initiating an investigation of UNESCO management practices by the General Accounting Office—a report which became an essential element of the withdrawal debate following its publication in draft form in September, 1984.

Other testimony highlighted a variety of benefits of UNESCO's scientific activities to the United States, including: access to data bases; access to research sites and personnel; development of international science and communications networks; development of markets for U.S. technology; cost-sharing of global projects; and improvement in the quality of basic research. While few would argue that the importance of continuing UNESCO's science programs should override other aspects of the withdrawal decision, it was apparent that the U.S. government should begin a vigorous effort to ensure that the benefits of UNESCO scientific programs are maintained via other avenues and other funding mechanisms in the event that the U.S. goes through with its withdrawal.

Committee Publication Number 98-120.

3.3(P)—EPA's Office of Research and Development

With the authorization bill for EPA's FY 1985 research and development budget already passed by the House (see Chapter II, Section 2.5), the Committee conducted an oversight hearing on March 14, 1984 on the status and plans for the EPA research program. The hearing was the first appearance before the Committee of EPA Administrator William Ruckelshaus, who had been confirmed by the Senate in May, 1983.

The hearing dealt with a wide variety of issues related to the management, funding, and goals of the EPA R&D effort, including acid rain, groundwater, EDB and other pesticides, indoor air pollution, ocean dumping and ocean pollution, hazardous waste management, the role of the Science Advisory Board, agency morale, long-term planning, and the role of OMB in environmental management.

Committee Publication Number 98-80.

3.3(Q)—Risk Assessment Research and Demonstration Act of 1983 (H.R. 3840, H.R. 4192)

To establish coordinated interagency research and demonstration projects for improving knowledge and use of risk assessment by those Federal agencies concerned with regulatory decisions related to the protection of human life, health, and the environment.

Summary and background of legislation

The procedures by which agencies determine the extent of the human health risk posed by hazards are often at the heart of major regulatory decisions to regulate or ban hazards in the environment, in our foods, in our homes, and in the workplace. Those procedures, referred to as risk assessment, must be based on objective scientific data to help ensure the credibility and efficacy of regulatory decisions. A recent report by the National Research Council of the National Academy of Sciences recommended that agencies distinguish between risk assessment and risk management, defined as the "process of weighing policy alternatives and selecting the most appropriate regulatory action, integrating the results of risk assessment with engineering data and with social, economic and political concerns to reach a decision."

In recent years, concern has been expressed that risk assessments conducted by regulatory agencies frequently have been flawed by bias, exaggeration, inconsistency, poor scientific quality, redundancy, and poor communication of risk to the public.

Mr. Ritter introduced H.R. 3840, the "Risk Assessment Research and Demonstration Act of 1983", which subsequently became Title I of H.R. 4192. Title I of H.R. 4192 requires eight designated federal agencies, including the Environmental Protection Agency, the Food and Drug Administration, the Occupational Safety and Health Administration, and the Consumer Product Safety Commission, to conduct demonstration risk assessments under the coordination of an agency to be designated by the President. The bill requires the coordinating agency to report to Congress and to make recommendations for future research, needed legislative and non-legislative changes, and improvement in public understanding. Section 107 of the bill sets out criteria to be included in the demonstration risk assessment projects to be conducted by the agencies. The bill authorizes no new funds.

Summary of hearing

Witnesses at the two days of hearings represented a wide range of interests and expressed differing viewpoints on the bill. While endorsing the concept that risk assessment procedures could be improved, representatives of four major regulatory agencies (the Environmental Protection Agency, Consumer Product Safety Commission, Occupational Safety and Health Administration, and the Food and Drug Administration) testified that major improvements were already taking place and that the agencies were coordinating risk assessments through the establishment of the Interagency Risk Management Council. Labor, consumer, and environmental repre-

sentatives and several other witnesses generally opposed the bill's proposal to permit the President to designate the agency to coordinate the demonstration risk assessment projects for fear of unduly politicizing the objective and scientific basis of risk assessment. They, and others, also questioned whether improvements in risk assessment procedures would be helpful in light of the fundamental lack of data concerning the human health effects of exposure to hazardous substances. The bill received general support from some of the academics and industry representatives who testified, and a number of the witnesses offered suggestions for improvements.

Legislative history

H.R. 3840 was introduced by Mr. Ritter on August 4, 1983 and referred to the Committee on Science and Technology. On October 6, 1983, the Subcommittee on Science, Research and Technology met to mark up the bill and amended it by adding Title II and reported the amended bill to the full Committee. Title II added provisions which had previously been introduced by Mr. Martin as H.R. 3976, the Central Board of Scientific Risk Assessment Act of 1983.

On October 21, 1983, Mr. Ritter introduced the bill, as amended by the Science, Research and Technology Subcommittee, as H.R. 4192. The bill was referred to the Committee on Science and Technology and was subsequently referred to the Subcommittee on Natural Resources, Agriculture Research and Environment, and the Subcommittee on Science, Research and Technology.

On March 9, 1984, noting opposition from the Administration and several agencies, Mr. Martin communicated his intention to withdraw Title II of the bill. Subsequently, hearings were held on Title I of the bill on May 17 and June 5, 1984 by the Subcommittee on Natural Resources, Agriculture Research and Environment.

Committee Publication will be available.

3.3(R)—Agriculture Weather Operation

Background

The National Weather Service provides agricultural weather information to farmers, budgeted at $1.5 million dollars in 1983. For the past two years, the Administration has proposed elimination of all agriculture weather services because it is maintained that agriculture weather information is provided to narrow interest groups and could be provided by the private sector. Each year Congress restored the funding, but uncertainties in funding have jeopardized the quality of the program. A report by the Agriculture Research Institute, issued in January, 1984 on a proposed agriculture, forestry, and national research weather and climate system strongly recommended that the National Weather Service and the Department of Agriculture integrate the existing agriculture weather programs into one dynamic, coordinated system.

Summary of hearing

On June 27 and 28, 1984 the Natural Resources, Agriculture Research and Environment Subcommittee and the Agriculture Subcommittee on Department Operations, Research, and Foreign Agriculture held a joint hearing on the establishment of a National Ag-

riculture Weather Operation. The need for this specialized hearing was determined in a previous NRARE Subcommittee hearing on the Agriculture Weather Service, held in Florida on March 31, 1983.

The objectives of the hearing were to: assess the reliability, coordination, and efficiency of existing federal agriculture weather operations; review the government, private sector, academic and user requirements and advice for a national agriculture weather service system; examine the Agriculture Research Institute's proposed Agriculture Weather System plan; and assess the ability of the private sector to complement and support a National Agriculture Weather System.

Testimony from farmers, and National, state and private agriculture weather services concluded that: benefits far outweigh the costs of providing national weather information (annually saving probably billions of dollars); agriculture weather information must be continued to be supplied by the National Weather Service since there is no effective substitute for this service in the private sector, and funding must be assured as the backbone for the agricultural weather system; once finding is assured, state and private sectors can develop and apply appropriate complementary support technology, compile detailed local information, and develop the market within the agriculture community by educating the farmers, and 4) the Agriculture Research Institute's proposed Agriculture Weather System may be important in coordinating the National, state, academic and private sector efforts.

Committee Publication will be available.

3.3(S)—Hurricane Storm Surge Research

Background

Extensive development in coastal areas of the Eastern United States, combined with the lack of any major hurricane activity in those areas in the last twenty years, have created a potential for a major disaster from the storm surge associated with a major hurricane strike. The storm surge is a dome of water, forty to fifty miles across, and as high as twenty-five feet or more above sea level, which is pushed before the hurricane as it approaches land. The storm surge, which causes heavy coastal and estuarine flooding, has always been the primary cause of loss of life in hurricanes.

To protect lives, Gulf Coast states have prepared detailed evacuation plans based on a sophisticated storm surge computer simulation developed by the National Weather Service. However, the National Oceanic and Atmospheric Administration, which has partly funded the computer studies in the past, presently has no source of funds for similar studies in vulnerable East Coast areas such as Ocean City, Maryland and Atlantic City, New Jersey.

The use of the National Weather Service's computer model in conjunction with evacuation studies revealed for the first time that the time needed for evacuation frequently far exceeds the time in which the National Weather Service can warn of a probable hurricane strike. As a result, many planners are now considering whether multi-story buildings in coastal areas can be adapted to withstand hurricane forces and serve as a "vertical refuge" of last

resort for those who cannot evacuate. Presently, little is know about the feasibility of the "vertical refuge" concept and little research is on-going.

Summary of hearings

On August 9, 1984, the Subcommittee on Natural Resources, Agriculture Research and Environment held hearings to assess the vulnerability of Gulf and East Coast areas to storm surge destruction, to assess the value of the National Weather Service's storm surge computer model for forecasting and evacuation planning purposes, to review the need for funding to complete evacuation studies using the computer model, and to review the status of research on "vertical refuge."

Dr. Neil Frank, Director of the National Weather Service's National Hurricane Center, informed the Subcommittee that "[W]e are more vulnerable to hurricanes in the U.S. than we have ever been in our history." Dr. Frank reviewed the effects of recent hurricane strikes and recommended that vulnerable areas should adopt certain development restrictions to reduce the risk of damage and loss of life from storm surges, and that efforts be made to encourage the development of vertical refuges in areas that could not be completely evacuated. Dr. Samuel Speck, Associate Director of the Federal Emergency Management Agency (FEMA), discussed his agency's involvement in funding hurricane evacuation studies and conducting hurricane preparedness programs in vulnerable areas.

Mr. Dave Murray, Chairman of the Board of Broadcast Meteorologists and meteorologist of the television show, "Good Morning America", told the Subcommittee that the public in the Northeast was largely unprepared for hurricanes, and discussed the role of the media in assisting orderly evacuation of threatened areas.

Professor James Mitchell provided the Subcommittee with the results of a recent evacuation study he had prepared for coastal New Jersey areas that indicated that portions of the New Jersey coastal areas, including Atlantic City and Cape May, could take as long as 30 hours to evacuate. Dr. Mitchell proposed several courses of action to reduce the risk. Ms. Ruth Ehinger, of New Jersey's Department of Environmental Protection, stressed the State's need for the data generated by the National Weather Service's computer model in evacuation planning.

Professor Byron Spangler of the University of Florida described a study which he had conducted for Monroe County, Florida, to identify existing buildings as possible hurricane shelters. Dr. Jay Baker, of Florida State University, discussed the arguments for and against establishing vertical refuges.

Committee Publication will be available.

3.3(T)—Nuclear Winter

Background

The nuclear winter hypothesis posits that a nuclear exchange consisting of only a fraction of the total existing nuclear arsenals of the U.S. and the U.S.S.R. could cause a dramatic decline in worldwide temperature which would threaten the continued exist-

ence of life on earth. To the extent that this hypothesis is valid, there is reason to consider revising our nuclear strategic policies in order to take nuclear winter into account.

The President's Science Advisor has directed the National Oceanographic and Atmospheric Administration to coordinate and plan a large federal research program on nuclear winter. The federal plan will stress major uncertainties underlying the atmospheric conditions which could trigger nuclear winter. Concurrently, the Department of Defense has begun research into the strategic and policy implications of the nuclear winter hypothesis.

Summary of hearing

The Subcommittee convened a hearing on September 12, 1984, to examine several aspects of nuclear winter: the degree of uncertainty in calculations of its severity; the possible climatic, biological, and strategic consequences of such an event; the funding, research focus, and interagency coordination necessary for an effective federal research program; and the desirability of international scientific cooperation in evaluating the consequences of nuclear war.

Testimony was received from a panel of Dr. Carl Sagan, Dr. Edward Teller, and Dr. Stephen Jay Gould, in addition to Administration officials, a Russian scientist, and a panel of defense nuclear experts. Dr. Sagan and Dr. Teller disagree strongly on the likely climatic consequences of nuclear war and on the strategic implications that flow from these climatic consequences.

The Subcommittee expressed an interest in revisiting the issue of nuclear winter in the 99th Congress, in light both of the importance of the issue and of the large size of the planned federal research program. Over the next five years, federally sponsored nuclear winter research is expected to total over $50 million to yield secondary benefits both to international scientific cooperation and to the atmospheric sciences.

Committee Publication will be available.

3.3(U)—U.S./Soviet Satellite Accord: SARSAT/COSPAS Search-and-Rescue

Background

In 1977, the United States (NASA) signed an agreement with Canada and France to conduct an experimental satellite-aided search-and-rescue program called SARSAT. The agreement called for France and Canada to supply equipment, to be attached to the United States' two operational polar-orbiting weather satellites, that would track emergency beacon signals from downed aircraft or ships in distress. That same year, the Soviet Union joined the SARSAT partners and agreed to provide two interoperable search-and-rescue satellites under a project called COSPAS.

SARSAT/COSPAS satellites pick up beams from downed aircraft or boats in distress and transmit these signals to land-based computers for evaluation. The computer then pinpoints the location, and rescurers are dispatched.

In May of this year, the United States and the Soviet Union each agreed to maintain two polar-orbiting satellites as part of the SARSAT/COSPAS "fleet" through the end of the 1980s. This agree-

ment was scheduled to be signed officially in Leningrad during the week of October 1, 1984.

On July 16, 1984, however, OMB Director David Stockman wrote to Secretary of Commerce Malcolm Baldrige asking for Baldrige's assistance in the United States' negotiation of the international agreement. Stockman addressed his concerns to Baldrige since the SARSAT program is scheduled to be transferred from NASA to the Department of Commerce (NOAA). Stockman noted in his letter that Administration policy has consistently called for, and continues to mandate, a reduction from a two polar-orbiting to a one polar-orbiting weather satellite system and he gave the impression that any agreement committing the U.S. to a two polar-orbiting weather satellite system should not be signed.

The Committee on Science and Technology has in the past examined proposals to reduce the two polar-orbiting satellite system, concluding in Report 98–135, page 24, that the two-satellite system proves to be a beneficial foreign and domestic cost-effective investment. In addition, for the past three years, the Congress has budgetarily supported the polar-orbiting weather satellite system and on August 20, 1984, President Reagan signed P.L. 98–411 (Commerce/State/Justice Appropriations) committing the U.S. to two polar satellites through the end of FY 1985.

Summary of hearing

On September 18, 1984, the Subcommitte held a hearing on the U.S.-Soviet satellite accord on the SARSAT/COSPAS Search-and-Rescue Program.

Congressman Daniel K. Akaka testified at the hearing that in a bipartisan effort he and twenty-five other Members introduced H. Con. Res. 360, which declares a U.S. commitment to sign the SARSAT/COSPAS agreement.

Walter Greene, a builder of sailboats based in Yarmouth, Maine, testified that he survived a boating accident because the Coast Guard was able to track him through the electronic transmitters of the SARSAT/COSPAS system. A second boating accident victim, Clinton Spooner, Esq., of Alexandria, Virginia, testified that the SARSAT/COSPAS system was not operational at the time of his accident and that one of his crew members perished because rescue efforts were unsuccessful in locating his lost craft.

Officials in the Air Force, NASA and the Coast Guard all testified on their participation in the program, confirming that the search-and-rescue satellites not only constitute a leap forward in accuracy and reliability, but they also can reduce to a matter of hours what may have taken days or even weeks by conventional means.

As of July 15, 1984, the system has been credited with saving 247 lives worldwide, of which 177 were in North America. None of the rescures have been Soviet citizens, but most of the rescues have been attributed to the Soviet satellites. The United States has emergency locater transmitters on more than 200,000 civilian aircraft and 6,000 ships and, as confirmed by witnesses from the Aircraft Owners and Pilots Association and the Radio Technical Commission for Maritime Services, the civilian crafts are higly dependent on the satellite locating methods.

Dr. Raymond L. Garthoff, Senior Fellow of U.S.-Soviet Relations at the Brookings Institute, testified that not only is a U.S. reduction likely to harm the program but such action by the U.S. would suggest unreliability to U.S. Allies and other countries. Moreover, the Soviet Union would undoubtedly take advantage of the opportunity to launch propaganda criticism, contrasting American unreadiness to spend relatively modest sums on peaceful cooperation in space, while devoting very large sums to major new weapons programs in space.

Significant testimony came from Jim Bailey, the Chief of the NOAA SARSAT/CORPAS Coordinating Unit. He informed the Subcommittee that, although OMB had raised concerns with the Administration on the financial obligation of the two-polar orbiter satellite system, the Administration had determined that the U.S. would enter into negotiaitons in Leningrad and was "desirious of providing a two-SARSAT system within the President's budget".

In London, England, on September 27, 1984, the U.S. Delegation, with NOAA as the mandated signatory, signed the SARSAT Memorandum of Agreement with Canada and France to maintain the program. On October 5, 1984, the U.S. Delegation, in Leningrad, Russia, again with NOAA as the mandated signatory, signed the SARSAT/COSPAS Memorandum of Understanding (MOU) with the Soviet Union. The MOU obligates the U.S. to provide the two SARSAT-equipped space craft in orbit and the maintenance of normal operations of the system until either an international framework for continuity of the system is developed or until 1990, whichever comes first.

Committee Publication will be available.

3.3(V)—Tropical Forest Development Projects: Status of Environmental and Agricultural Research

Background

Widespread deforestation in the world's remaining tropical forests has raised major environmental and ecological concerns. In a global level, deforestation has been linked to increasing levels of carbon dioxide in the atmosphere both through the burning of vast areas of forest and the loss of trees converting carbon dioxide into oxygen. In addition, tropical forests account for much of the remaining biological diversity, and irreplaceable resource of significant value to medicine, agriculture and biotechnology. Regionally, deforestation contributes to rapid degradation of the land, increased flooding, and siltation of waterways.

Researchers generally agree that most deforestation is caused by peasant "slash and burn" agriculture and cutting for fuel wood. As the population of tropical nations double to four billion over the next thirty years, such pressures on tropical forests can only increase.

To meet these needs, a sustained program of agriculture and environmental research is needed to identify ways to develop the resources of tropical forests while balancing environmental concerns. A recent report from the Office of Technology Assessment (OTA) warned that "research on tropical forest resources is poorly coordinated."

In recent years, multilateral development banks (MDBs), such as the World Bank, have attempted to direct development in these areas in a more planned way through loan agreements. One such large-scale project is the Northwest Brazil Development Project. Despite more than two years of effort, serious questions and concerns have been raised that the Bank has been unable to direct development effectively and that the area is largely unsuitable for the type of agricultural development which the Bank had envisioned.

Given the important role and stake of the multilateral development banks in developing tropical forests, observers have suggsted that such projects ought to include a greater applied research component to address the types of research shortcomings identified in the OTA Report. Better use of existing research could also avoid long-term environmental degradation and the consequent economic hardships and social dislocations associated with depleted natural resources.

Summary of hearings

On September 19, 1984, the Subcommittee on Natural Resources, Agriculture Research and Environment held hearings to review: the state of knowledge concerning the ecological importance of tropical forests and the environmental impacts of deforestation; environmental and agricultural research concerned with sustained agricultural or other development of tropical forest regions; Latin American tropical forest development projects funded by MDBs, to determine the extent to which such projects take into account available environmental and agricultural research and whether such projects offer an opportunity for further research; and whether tropical forest development projects can be better directed with the assistance of improved environmental and agricultural research.

The first witness, Mr. Jose A. Lutzenberger, is a Brazilian soil scientist active in Brazil's environmental organization, Associacao Gaucha de Protecao ao Ambiente Natural (AGAPAN). Mr. Lutzenberger introduced and commented upon a videotape shown to the Subcommittee. The videotape showed segments of a documentary entitled "The Decade of Destruction" which was a ten-year chronicle of the development of the Rondonia area of northwest Brazil. Mr. Lutzenberger described the environmental degradation caused by agricultural development which could not be sustained with the poor soils and heavy rains of the area. He also described the accompanying social turmoil, including clashes with native Indian groups. He identified several alternative agricultural systems which could produce needed agricultural products without harming the fragile ecosystem of the forest. Mr. Lutzenberger also criticized the government of Brazil for violating the terms of the agreement with the World Bank by continuing to promote migration into the northwest region and by constructing roads which would threaten areas designated as protected Indian areas or environmental reserves.

Dr. Jorge Illueca, Director of the Environmental Commission of the Republic of Panama, discussed the problems stemming from tropical deforestation in his country and the difficulties in imple-

menting an agricultural system which did not contribute to the problem.

Mr. Lutzenberger's criticisms were echoed by a variety of other witnesses, including Mr. Bruce Rich of the Natural Resources Defense Council, Ms. Barbara Bramble of the National Wildlife Federation, and Mr. Brent Milligan, Advisor, Foundation for Economic Investigation and Research (FIPE), University of Sao Paulo. Many of the witnesses indicated the need for additional research to identify agricultural systems which could be productive in the tropical forests without depleting vital natural resources.

Mr. Tom Lovejoy, of the World Wildlife Fund, discussed the complexity of the ecology of the rain forest and the difficulties that MDB's had in trying to direct development in a more ecologically sensitive manner. Mr. Lovejoy suggested that MDB's could award credits for ecologically sound development to help reduce the debt owed to the MDB's by many of the Latin American nations. Dr. Walter Parham, from the Office of Technology Assessment, described OTA's recent report on tropical forests and reiterated OTA's findings concerning the paucity and poor coordination of the research being conducted.

Following the hearings, a written statement was received from the Department of the Treasury's Office of Multilateral Development Banks, setting out the research basis for the World Bank's decision to loan Brazil funds for the Northwest Development Project. Chairman Scheuer subsequently sent a letter to Treasury Secretary Regan asking the Department and the World Bank for a response to a number of points that had been raised at the hearing.

Committee Publication will be available.

3.3(W)—Field Briefing on Tornado Prediction and Preparedness in the Carolinas During the Severe Weather of March 28, 1984

Background

On March 28, 1984, a number of violent tornadoes swept through North and South Carolina, killing fifty-nine people and causing hundreds of millions of dollars in damages. It was the worst tornado event in the Southeastern United States in nearly sixty years.

A National Disaster Survey team reported to the Administrator of the National Oceanic and Atmospheric Administration in July 1984. The Survey Team Report indicated that while forecasts of severe weather sent to the local weather service offices from the National Severe Storms Forecast Center in Kansas City were accurate, tornado warnings were not issued for most of North Carolina until after the tornadoes had swept through the state. The Report noted that the failure of the Raleigh Weather Service Field Office (WSFO) to issue tornado warnings was due largely to the inability of the local warning radar to detect tornadoes and to the lack of ground "spotter" reports. The Report also stated that organized tornado spotting networks were of limited value, and that the issuance of tornado warnings and community preparedness activities were uneven in the two states. The Report also noted that the ability of the Raleigh WSFO to alert the media and the public was limited by the destruction of the microwave tower that carried weath-

er information to media outlets. The only direct source of storm information from the National Weather Service during the storm itself came from NOAA Weather Radio.

The Survey Report recommended: that vacancies at the Raleigh and Columbia WSFOs be filled and that a dedicated warning/preparedness meteorologist be established at the Raleigh WSFO to work with communities and the media; that efforts to train storm spotting networks should be improved; that the WSFOs should use the Federal Emergency Management Agency's emergency warning system to gather storm reports; that back-up communication systems be developed and that NOAA Weather Radio continue to be promoted; and that plans to introduce more sensitive, ten-centimeter Doppler radar should be implemented as soon as possible.

Summary of field briefing

As part of its ongoing oversight over the performance and capabilities of the National Weather Service and National Oceanic and Atmospheric Administration, the Subcommittee on Natural Resources, Agriculture Research and Environment held a field briefing in Rocky Mount, North Carolina on October 18, 1984 to review the findings of the Survey Team Report and evaluate the performance of the National Weather Service in predicting the storms of March 28 and in preparing and warning the communities affected.

Dr. Eric Schneider, Special Assistant to the Administrator of the National Oceanic and Atmospheric Administration and Survey Team Leader, reported on the Survey Team's research and findings. Mr. James L. Campbell, Emergency Warnings Meteorologist of the Severe Branch of the National Weather Service, briefed the Subcommittee on a highly effective preparedness program in Bennettsville, South Carolina that had been reviewed by the Survey Team.

Emergency management officials from the State of North Carolina and from the regions affected by the tornadoes described the events of March 28, 1984, and their assessment of the performance of the Weather Service in predicting, warning, and preparing their communities for the storm. While there was general praise for the efforts of the Raleigh WSFO, most witnesses agreed that the assignment of a dedicated warning/preparedness meteorologist to that office would have improved the level of communication during the storm and the preparedness of the communities before the storm. Local television weather broadcasters similarly recounted the events of March 28 and their efforts to obtain information from the Raleigh office after the Weather Wire service was interrupted and provided their views of the role of the media in informing the public.

Dr. Elbert W. Friday, Deputy Assistant Administrator for Weather Services of the National Oceanic and Atmospheric Administration, described NOAA's response to the Survey Report's findings, and discussed present plans to introduce Doppler radar and to improve communications at local weather service offices and WSFOs. He also announced that NOAA had decided to adopt one of the principal recommendations of the Survey Team that a dedicated warning/preparedness meteorologist be assigned to the Raleigh Weather Service Field Office.

Several employees of the Raleigh Weather Service Field Office also testified concerning technical improvements that could be implemented to help communicate more effectively with the media and the public.

Committee Publication will be available.

3.4—The Subcommittee on Energy Research and Production

3.4(A)—Nuclear Fission R&D, Breeder Reactors and Advanced Converters

GENERAL OVERSIGHT

The subcommittee held three hearings on the DOE's Nuclear Fission R&D program request for FY 1984 (including the Breeder Reactor and Converter Reactor Systems programs) on February 22 and 23, and March 9, 1983. Ten witnesses testified on the Breeder Reactor program, principally discussing the relative merits of the Clinch River Breeder Reactor Project (CRBRP) as a focus for the long-term Nuclear Fission program. The subcommittee's recommendations regarding the Breeder Reactor program for FY 1984 were predicated on the continuation of the CRBRP. Although the funds requested for FY 1984 were not authorized (the matter was deferred) the full committee later voted to prohibit authorization of funds for the project for FY 1984 until separate legislation was considered on the Alternative Financing Plan (AFP). The Project was ultimately determined by a Senate vote on the FY 1984 Appropriations bill to terminate CRBRP. As a result of the prospective continuation of the CRBRP during FY 1984, the Breeder Technology program request was reviewed by the subcommittee from the narrow perspective of how to support the breeder option with an existing demonstration project focus in CRBRP.

Although the Administration requested no funds for the High Temperature Gas-Cooled Reactor (HTGR) program under Converter Reactor System in the FY 1984 request, the subcommittee recommended $39,500,000 for the program based on strong support for this alternative to Light Water Reactors (LWRs).

With funding provided solely for the orderly termination of the CRBRP for FY 1985, hearings were held on February 7 and 8, 1984 with the objective of arriving at a proper new focus for the DOE's breeder activities and overall direction for the Nuclear Fission R&D program. Prior to the hearings, the Members and staff met with numerous industry, utility and university representatives to obtain recommendations as to an overall program direction and regarding specific initiative which might be taken in Nuclear Fission R&D given the demise of the CRBRP.

The subcommittee expressed great interest in a new class of reactors, referred to as Inherently Safe Reactors (ISRs), which are now commonly referred to as "passively safe systems." The committee and subcommittee chairmen had written the Secretary of Energy in November, 1983, suggesting that the Department fund initiatives in this area, particularly the Modular High Temperature Gas-Cooled Reactor (MHTGR) concept. A $12.4 million add-on to the Administration's request of $34.6 million for the HTGR program

was recommended to augment activity on the Modular concept. The subcommittee suggested an advanced reactor thrust for the overall Nuclear Fission R&D program and this policy was spelled out in the committee report (H. Rept. 98-686) which accompanied H.R. 5244. The subcommittee also provided a detailed rationale for its support of MHTGR R&D and emphasized the possibility of an entirely new licensing approach for such a machine, which could be manufactured in-plant rather than field construced. This latter feature allows for a qualitatively different licensing approach, i.e., type of certification.

The subcommittee also recommended a new focus for the Breeder Reactor program through design activity on innovative breeder concepts to be supported by the Liquid Metal Base Technology program. In the view of the subcommittee, this modified Liquid Metal program would provide the technology base to transition to a Breeder program early in the next century, and technology activities in the Liquid Metal program could also support the Space Nuclear program, which was another area of particular interest.

Given the subcommittee's policy direction of both the intermediate-term passively safe reactor (i.e. MHTGR) and the long-term direction of the Liquid Metal program, an initiative in the near-term advanced Light Water Reactor Systems programs was also recommended. This program was outlined in the committee report, which called for an EPRI/DOE cooperative activity with an emphasis on advanced generic LWR features such as safer and simpler designs at an overall level of $5 million for FY 1985.

Committee Publication Numbers 98-18 and 98-89.

3.4(B)—Clinch River Breeder Reactor (CRBR) Project

On September 15, 1983, the subcommittee held hearings on an alternative financing plan for the Clinch River Breeder Reactor Project. Fifteen witnesses representing both sides of the argument for continuation and completion of the Clinch River reactor presented testimony on this financing plan. The plan was developed by the Department of Energy with an industrial task force comprised individuals representing the financial community as well as the utilities. The plan was in response to Congressional directives requiring that the Department investigate alternatives to the existing government-industry arrangements that called for substantial federal outlays to complete the project. The final form of the plan delineated a mechanism for raising approximately $1 billion to pay direct construction costs for the facility. The plan involved issuance of thirty-year bonds, obtaining new equity investments, and using research and development funds already committed by utilities and others to the project. Supporters of the plan argued that although additional assurances from the government would be required in order to balance the investment risk to investors, these funds would be returned to the Treasury through the sale of electricity from the plant. Opponents argued that the plan did not alleviate government investment risk, but rather called for indirect federal subsidies through tax benefits and other guarantees to these investors.

In October, 1983, the Senate voted to delete Clinch River Reactor funds from the Department of Energy's FY 1984 budget request. Thus, the controversy of the CRBR Project was ended after an expenditure of $1.7 billion. The Congress then directed the Department to develop a financial program for terminating the project. Such a plan has been developed, reviewed by the Congress, and is presently operative. A total investment of approximately $160 million will be required to finally close out the CRBR Project. These expenditures will support project close-out activities which will be completed in FY 1985.

Committee Publication Number 98–19.

3.4(C)—Three Mile Island

During the early morning hours of March 28, 1979, the worst accident in the history of commercial nuclear power generation occurred at the Three Mile Island Nuclear Power Station Unit II located in Middletown, Pennsylvania. The Committee on Science and Technology was immediately interested in the causes of the accident, and several Members visited the plant the day after the accident. Since then, the subcommittee has held oversight hearings on the lessons which have been learned in the course of R&D and cleanup activities and has reviewed these matters in the annual authorization hearings.

On May 22, 1984 the subcommittee held a hearing to review the progress of work being conducted under a Memorandum of Understanding signed by the United States Department of Energy, the Nuclear Regulatory Commission, the Electric Power Research Institute, and General Public Utilities, the owner and operator of Three Mile Island.

The purpose of the hearing was to identify lessons which have been learned in terms of changes in reactor design and operational procedures resulting from the accident, and to review the results of the R&D conducted to date. The subcommittee also closely reviewed the current status of the R&D program and the projected schedule for completion.

The subcommittee was pleased to learn that earlier funding problems facing GPU appear to have been resolved and that the cleanup and R&D project are moving forward in a satisfactory manner. All of the witnesses were in agreement that the availability of funding was crucial to orderly completion. By the end of 1984, it is expected that nearly $500 million of the projected $1 billion total cleanup costs will be expended.

So far, the recovery activities at Three Mile Island have led to a number of design and operational improvements throughout the nuclear industry. By the end of the current year, it is expected that the reactor vessel head will be removed and the general condition of the reactor core and primary system will be determined. Efforts are nearing completion for the design, development and manufacture of the defueling system which is expected to begin removing fuel from the crippled reactor sometime in July of 1985.

Committee Publication Number 98–125.

3.4(D)—Advanced Nuclear Systems

Space nuclear power

In February and March of 1983, the subcommittee held hearings on the Department of Energy's FY 1984 budget for Nuclear Fission R&D programs. On March 8, 1983, testimony was presented by the Department of Energy and other government witnesses on the Department's activities in the Advanced Nuclear Systems program. These program activities include the fabrication of radioisotope thermonuclear generators for NASA missions. The primary missions identified for these generators are the Galileo spacecraft scheduled for launch in 1986 and the International Solar Polar Mission (ISPM).

In addition, testimony was also received on the Department's participation in a cooperative program with the Department of Defense and the National Aeronautics and Space Administration in the development of a 100 kilowatt space nuclear reactor system under the SP-100 program. The arrangements for conduct of this program are outlined in a jointly signed agreement among the DOD/Defense Advanced Research Projects Agency, the Department of Energy and NASA. The February 11, 1983 agreement specified the activities and responsibilities of the three agencies in the develoment of a nucler power system for future space applications. The committee was instrumental in bringing about this agreement through the combined efforts of the Space Science and Applications Subcommittee and the Energy Research and Production Subcommittee.

Committee Publication Number 98-18.

On May 24, 1983, the two subcommittees held a joint hearing on the Space Nuclear Reactor program. Witnesses from NASA laboratories, Department of Energy laboratories, and industry presented testimony that provided information on the status as well as the historical development of nuclear reactor technology in the United States. This testimony also suggested that the Soviet Union was pursuing an aggressive program in the development of such space nuclear power systems.

Committee Publication Number 98-25.

Subsequent to these hearings, special briefings were held for committee staff on the potential military interests and need for such systems in the future. Based upon these and other related oversight activities and the FY 1985 authorization hearing held on February 8, 1984, the committee, in its report (H. Rept. 98-686) accompanying the Department of Energy Civilian R&D Authorization Act for FY 1985, 1986, and 1987 (H.R. 5244), made several authorization recommendations. It was recommended that the Department of Energy's FY 1985 request for space nuclear reactor development should be increased by $5 million. This recommendation was based upon the fact that additional funds will be required in order to assure that all technical evaluations and safety related research activities are completed in a time suited to the implementation of nuclear power systems for space in the 1990s.

Committee Publication Number 98-89.

3.4(E)—University Nuclear Engineering Programs

Early in January, 1984, the Department of Energy briefed committee staff on its Breeder Reactor Systems program. As part of this briefing, it was learned that in FY 1984, the Department has spent less than one percent of its total breeder base technology budget in direct support of graduate activities in nuclear engineering related to breeder reactor research and development. As a result of this finding and the overall lack of such funding in the Nuclear Fission R&D program, the subcommittee recommended to the committee that additional action be taken in the form of a legislative directive to the Department to increase this support in order to sustain viable nuclear engineering research programs at our key universities. In the report (H. Rpt. 98-686) accompaning H.R. 5244 (Department of Energy Civilian R&D Programs Authorization Act for Fiscal Years 1985, 1986, 1987), the committee authorized the expenditure of $5 million for the purpose of extending and strengthening the role of universities in the Department's Nuclear Fission R&D program. The Committee's intent was to remedy a profound lack of direct support for departments of nuclear engineering at our major universities. These funds were to be distributed between the establishment of fellowships and scholarships to individuals who are studing within the university departments and direct program support for research activities. Based upon staff discussions with appropriate Senate and Administration personnel, it is anticipated that the DOE will make a stronger effort during FY 1985 in order to respond to the Committee's recommendations.

3.4(F)—Nuclear Waste Management

Budget authorization hearings were held on February 24, 1983 and March 2, 1983 on the proposed FY 1984 Nuclear Waste program in the Department of Energy. Testimony was received on the generic research and development program funded by the Department of Energy and the nuclear waste fund activities funded by the private sector through fees charged by the Department of Energy. The subcommittee was interested in better defining the Administation's fund and understanding the Department's schedule for the Test and Evaluation Facility authorized in the Nuclear Waste Policy Act of 1982 (P.L. 97-425). The subcommittee also expressed support for the R&D program on subseabed disposal of nuclear wastes, but cautioned that the U.S. should not seek preeminence in this backup technology.

Committee Publication Number 98-180.

The subcommittee recommended in its report to the full committee that the Waste Fund be authorized with specific "set-asides" for the Test and Evaluation Facility in FY 1984, 1985, and 1986. The view was that these set-asides would be sufficient to full fund activities relatred to the construction and operation of the TEF.

The Subcommittee also recommended a $2 million set-aside for the mission plan required under the Waste Act, listing six important reasons for the timely preparation of this important planning document.

Two budget authorization hearings were held on February 9, 1984 on the nuclear waste management program in the Depart-

ment of Energy. Witnesses from the Nuclear Regulatory Commission, the Department of Energy, and private industry presented testimony on the Department of Energy's performance in implementing the Nuclear Waste Policy Act of 1982 and several other programs involving nuclear waste.

Of particular concern to the subcommittee and the many witnesses was the Department's unsatisfactory performance in meeting the goals of the Nuclear Waste Act within the time periods specified. A contributing factor was th fact that no permanent director had been appointed by the Secretary of Energy through the Office of Radioactive Waste Management created by the Waste Act. It was evident that the program could not be efficiently planned and implemented without the appointment of an office director.

Committee Publication Number 98-89.

Additional issues were the schedule for the Test and Evaluation Facility (TEF), the potential use of decommissioned Titan missile silos for the storage of spent fuel, the use of a universal spent fuel container for transportation, storage and disposal, and the encouragement of a utility auditing role at the Department of Energy to advise the Department and provide comments to Congress.

The witnesses also spoke of the need to investigate the use of copper for nuclear waste storage containers to help the ailing domestic copper industry, and the need to contain cost escalation within the Department's Nuclear Waste Disposal program.

The committee report (H. Rept. 98-688, Part I) on the Department of Energy FY 1985, 1986, and 1987 authorization bill supported DOE's schedule for the possible development of the Test and Evaluation Facility at the potential repository. The committee directed that any decision to proceed with a TEF should be made such that subsurface construction could be scheduled for not later than the effective date of repository site selection as intended in the Nuclear Waste Policy Act of 1982.

The Department was also advised to establish a formal commitment to deadlines in the Waste Act so that the budget for the program could be utilized in the most efficient manner.

The committee declined to support any increase in the 1 mill/kilowatt hour fee charged to the utilities because it was justified by neither the program effort nor the Department's strecthed-out schedule to comply with the Waste Act.

The committee also supported the development of a universal spent fuel container, the study of copper for disposal containers, and the establishment of a utility auditing team for the Nuclear Waste program.

The Department of Energy advised the committee in September of 1984 that it would not be able to comply with direction given the Department in a report accompanying the FY 1985 Appropriations bill regarding the submittal of the project decision schedule. In response to this letter, the committee initiated correspondence with the Appropriations Committee seeking its support for a closer scrutiny of the Department's FY 1986 budget request to ensure that this request matches the stretched-out schedule which has been adopted by the Department.

3.4(G)—Fusion Energy—Specific Oversight

A hearing on the Department of Energy's comprehensive management plan for the Magnetic Fusion Energy (MFE) program was held on October 20, 1983. The subcommittee was concerned about the absence of both specific milestones and identification of funds requirements in future budgets to achieve such milestones. The results of this hearing formed a basis for the subcommittee's interest in the Tokamak Fusion Core Experiment (TFCX) device as a budget issue in the FY 1985 authorization hearings.

Committee Publication Number 98-62.

3.4(H)—Fusion Energy—General Oversight

Four days of hearings were held during the 98th Congress on the DOE's Magnetic Fusion Energy program. The Department's budget and programs were the subject of hearings on March 17, 1983, and February 23, 1984. Testimony from industry and university representatives was also reviewed in separate sessions on March 16, 1983 and February 29, 1984.

Critical issues at the March 16 and 17, 1983 hearings were the nature of the engineering development aspects of the program, as well as the delineation of the various critical elements of the next major fusion device required to maintain a focus for orderly progress in the U.S. program.

Among other topics discussed during the FY 1984 authorization hearings on March 16 and 17, 1983 were:

(1) The manner in which industry involvement could be maintained in the program;

(2) The program's progress, particularly the start-up of the Tokamak Fusion Test Reactor (TFTR) at Princeton;

(3) The level of university involvement in the program;

(4) The potential for university cooperation with the national laboratories; and

(5) The possible future direction for the program, including concepts for the next device to be built, such as TFTR up-grade.

The critical issue discussed at the February 23 and 29, 1984 hearings was the need for the U.S. Magnetic Fusion Energy program to move ahead with design and construction of the next tokamak device. A community consensus emerged that this device should be a long-burning, ignited plasma device referred to as the Tokamak Fusion Core Experiment (TFCX) or the Burning Core experiment (BCX). The DOE's Magnetic Fusion Advisory Committee (MFAC) emphasized the need for such a next step.

Among other topics discussed in the FY 1985 authorization hearings were:

(1) The up-grade capability of a TFCX-type device;

(2) The possible low-cost designs for the long-pulse, ignited plasma device;

(3) The prospects for international cooperation in future MFE projects;

(4) The progress in the Mirror program at MIT and the Lawrence Livermore National Laboratory;

(5) The response to Dr. Lidsky's (MIT) criticisms of the MFE program and his pessimistic engineering projections for fusion power; and

(6) How the vitality of the overall MFE program might be enhanced.

Committee Publication Numbers 98-30 and 98-88.

3.4(I)—Fusion Advisory Panel

The subcommittee's Magnetic Fusion Advisory Panel (MFAC), comprised of distinguished fusion scientists and outstanding industrial leaders, continued to assist the subcommittee throughout the 98th Congress in determining recommendations for the Magnetic Fusion Energy program emphasis and overall funding.

The Panel met on April 14 and 15, 1983 to respond to the subcommittee's recommendations for the FY 1984 Magnetic Fusion Energy program and budget add-on of $34 million to provide a $500 million funding level. The Panel noted that "The results achieved during the past year more than justify this farsighted action in a very difficult budget year." The Panel also observed, "We suggest that progress in engineering development would be accelerated if the recommendations on utilization of industry in the recent National Research Council report entitled 'Future Engineering Needs of Magnetic Fusion' were vigorously implemented." The Panel also warned, "As we see it, the Nation's relative position will be eroded in the late Eighties because of the vigorous rates of progress abroad." And, further, that "To participate in a well-coordinated and cost-effective international fusion program, the U.S. must maintain its leadership position." They also recommended that the program approach should be such that "subsequent steps should be prepared so that the program will be ready to take advantage of accelerated near-term results."

The Panel met on February 9, 1984 to address the need for a TFCX-type next step in the U.S. Magnetic Fusion Energy program in the context of the prospects for international cooperation. The Panel reviewed the report of the DOE's Energy Research Advisory Board's (ERAB's) Technical Panel to the Secretary and the recommendations of the MFAC. As a result, the Panel recommended that the program's top priority should be "the achievement of an ignited, long-pulse plasma based on the tokamak principle." They noted that such a project would serve as "a driver of reactor-relevant technologies," and "a focal point for constructive industrial participation." The Advisory Panel letter to the subcommittee Chairman also pointed out that, while "international cooperation should be sought" for TFCX/BCX, the "U.S. should be prepared to proceed alone" and "plan and design [should go forward] without delay."

3.4(J)—Uranium Enrichment

A hearing was held on March 19, 1983 on the Department of Energy's Uranium Enrichment program at which the subcommittee expressed its concern about the accelerating decline of the U.S. position in the world uranium enrichment market and about DOE's program plans in the context of this declining position.

In May 1983, the committee formally noted its concern over DOE's program plans and recommended, in House Report 98–81 on the Department of Energy FY 1984 budget authorization, that DOE conduct a comprehensive review or pricing and program plans for the enrichment business.

Committee Publication Number 98–4.

CBO options analysis

In June of 1982, the subcommittee asked the Congressional Budget Office to prepare an analysis of the long-term costs to the Uranium Enrichment program of DOE's program plan and of several other options for operating plans. The study's objective was to evaluate the various options available to the Department of Energy from the standpoint of relative costs to the government.

The CBO reported to the committee in a hearing held on July 28, 1983. The CBO concluded that deployment of the Advanced Gas Centrifuge (AGC) and the Atomic Vapor Laser Isotope Separation (AVLIS) technologies offer the best promise to reduce costs of the enrichment enterprise. CBO's analysis indicated that these advanced processes could significantly lower the cost of providing enrichment services and correspondingly the price which the customer pays for enriched nuclear fuel. Their analytical results suggested that using AVLIS and AGC technologies would be much less expensive than the option the Department of Energy had been previously using as its planning guideline.

Committee Publication Number 98–49.

GENERAL OVERSIGHT

A budget authorization hearing was held on the Uranium Enrichment program on February 22, 1984 at a time when various factors were continuing to cause a depressed market and reduced revenues in the Uranium Enrichment program. These factors, some of which were within the control of the Department of Energy and the Congress, included artifically low prices of international competitors, growing costs in DOE's program, and a growing glut of enriched uranium available from a significant secondary market, that is, a resale market from private owners. This secondary market had been augmented, in part, by deliveries of surplus enrichment uranium from DOE under firm contracts with utilities.

It was learned at the hearing that this U.S. market situation was aggravated by the Administration's constraint that there would be no net appropriation for the Uranium Enrichment program to continue any of its plant and capital additions. Since no private business would normally finance capital additions entirely through current revenues, it was noted that this constraint prohibited the Department of Energy from operating the enrichment enterprise as the private sector would, i.e., "in a business-like manner." These problems were causing the Department of Energy to project significant losses in revenues and firm customers. The DOE also reported at these hearings its intent to redress these problems with a new "utility services contract," and to ultimately achieve cost containment by making a deployment choice between the advanced technologies in May of 1985 to reduce operating costs in the 1990s.

At further hearings on February 28, 1984, testimony was received from members of the private sector, principally those participating in the Department's research and development program on advanced technologies. These witnesses described the status of the Advanced Gas Centrifuge and Atomic Vapor Laser Isotope Separation technologies and generally supported DOE's position to select one or the other of the advanced technologies by mid-1985 for cost containment.

The legislative report (H. Rept. 98-688, Part I) on the Department of Energy's FY 1985, 1986, and 1987 authorization expressed some skepticism that the Department of Energy could make an informed decision on the advanced technologies as early as mid-1985. The committee supported DOE's position to make the 1985 decision on schedule. However, the committee observed that the absence of this detailed technical and economic information places an increased burden on the quality of the technical review required to render a deployment decision on these technologies. The committee also expressed the view that the losing technology should be funded at a reduced but healthy level in FY 1986 so that it might be deployed at a later date if, and when, warranted. The committee did its best to ensure that sufficient funds for this purpose would be available by reaching agreement with the Secretary of Energy that $73 million in unused prior year appropriations would be reserved for this purpose in exchange for the committee's agreement to permit a reprogramming of certain enrichment balances to terminate the Clinch River Breeder Reactor Project.

3.4(K)—Electric Energy Systems and Energy Storage Systems

A hearing was held on March 17, 1983 to review the Department of Energy proposed FY 1984 budget request for these programs. Testimony was received from the Department of Energy, the Electric Power Research Institute, the Institute of Electrical and Electronic Engineers, Inc., the National Rural Electric Cooperative Association, and the Madison Gas and Electric Utility.

Evidence was presented that proposed funding levels and personnel cutbacks left inadequate resources to continue these programs in an acceptable manner. The committee recommended an increase of $20 million for FY 1984, $8.5 million for Electric Energy Systems, and $11.5 million for Energy Storage Systems (H. Rept. 98-81). However, in the Energy Storage program, a portion of the funding was earmarked for an orderly close out and termination of projects which had reached their maturity for continuing federal development.

Committee Publication Number 98-4.

The subcommittee conducted a hearing on March 7, 1984 to review the Department of Energy's proposed FY 1985 budgets and planned activities in this area. Witnesses included officials from the Department of Energy and representatives from industry, national laboratories, professional organizations, and the academic community. The testimony assisted in determining the appropriate levels of authorization for a continued Federal role in funding these programs in FY 1985.

Committee Publication Number 98-87.

3.4(L)—Nuclear Safeguards: A Reader

The technical and institutional issues surrounding the implementation of nuclear safeguards are both complex and controversial. It is for these reasons that the subcommittee held hearings in the 97th Congress on the research and development aspects of safeguards to examine current efforts to develop new or improved safeguards equipment and techniques. The hearings confirmed the fact that many technological, economic and political factors influence the course of nonproliferation initiatives in this country and abroad.

As a follow-up to the subcommittee work, "Nuclear Safeguards: A Reader" was published. The "Reader" is a compendium of articles and other papers and is intended to serve as a reference document on how thinking about safeguards has evolved in the period from 1967 to 1983. At the request of the subcommittee Chairman, the Congressional Research Service assisted with the compilation, which is intended to present a balanced discussion of the nuclear safeguards issues.

Committee Publication T.

3.4(M)—Food Irradiation

The subcommittee held a hearing on July 26, 1984 to examine the status of the technical infrastructure required to support domestic food irradiation. The impending elimination of the chemical EDB (ethylene dibromide) as a quarantine fumigant in the food industry has become a significant driving force behind a renewed interest in irradiation technology. Irradiation is considered by many to be an attractive alternative to chemicals utilized in the post-harvest treatment of foodstuffs. It appears that this technology can potentially be used in the food preservation process in a variety of ways that may revolutionize the industry.

Testimony was received from Members of Congress, government agenices, national laboratories, foreign business interests, and private industry. The witnesses articulated issues related to legislative activity, government and industry R&D, regulatory activity, international interest, industry needs, consumer concerns, commercial development, and a wide range of other technical and institutional requirements.

Committee Publication Number 98-122.

3.4(N)—Research and Test Reactors

The Subcommittees on Energy Research and Production and Energy Development and Applications held a joint hearing on September 25, 1984 to identify any need for, and the potential impacts of, requiring universities, radio-pharmaceutical manufacturers, and other researchers to convert their research and test reactors to low enriched uranium (LEU) fuel. This conversion had been proposed by the U.S. Nuclear Regulatory Commission to protect against possible terrorist activity and to set an example encouraging other nations to comply with U.S. nuclear nonproliferation goals.

Testimony was received from government, laboratory, state, private industry, and university witnesses who identified the technical

feasibility, costs, benefits, and impacts upon the research and university communities should such conversions be ordered. A number of witnesses noted that not all reactors could presently be converted to low enriched fuel because the technology has not been fully demonstrated. Additionally, a substantial reduction in the risk of diversion of highly enriched material could be achieved by storage of fresh fuel at the Department of Energy facilities. Significantly, one witness projected that up to fifty percent of university research reactors could be closed down by universities in the event that they are forced to incur additional costs in the conversion of their reactors. Additionally, converting some reactors to low enriched fuel would mean that their research and test purposes could not be achieved.

All witnesses seemed to agree that if conversion to low enriched uranium fuel is to be ordered for some reactors, the Department of Energy should absorb most, if not all, the costs, including costs associated with amending the licenses for these reactors. Some witnesses suggested that security measures already adopted for some reactors be uniformly implemented at all research reactors so that conversion to low enriched fuel might not be necessary at all reactors. Additionally, where conversion is justified, an intermediate enrichment level of fifty percent highly enriched uranium (HEU) would be adequate to deal with all credible diversion hazards associated with using the fuel domestically.

Committee Publication will be available.

3.4(O)—Tax Incentives for New Energy Technologies

The Subcommittee held joint hearings on July 12 and 21, 1983, on tax incentives for new energy technologies, which is summarized in the Subcommittee on Energy Development and Applications Section 3.2(B) of the report.

Committee Publication Number 98-26.

3.4(P)—Computers and Their Role in Energy Research: Current Status and Future Needs

Joint hearings were held on June 14 and 15, 1983 on computers and their role in energy research: current status and future needs, which is summarized in the Subcommittee on Energy Development Section 3.2(L) of the report.

Committee Publication Number 98-20.

3.4(Q)—Lower Oil Prices: Implications for Energy R&D Policy

A joint hearing was held on June 22, 1983 on lower oil prices and their implications for energy R&D policy, which is summarized in the Subcommittee on Energy Development and Applications Section 3.2(A) of the report.

Committee Publication Number 98-27.

3.5—The Subcommittee on Science, Research and Technology

3.5(A)—Technology and Employment

Background

During the past several decades, industrialized nations have been undergoing a transformation of the work environment that rivals the changes resulting from the industrial revolution. While technological innovations offer the promise of economic progress and employment opportunities, there is growing concern about technologically induced unemployment, dislocations of workers, and obsolescence of workers' skills. The Subcommittee joined with the House Budget Committee's Task Force on Education and Employment in hearings on technology and employment, June 7, 9, 10, 14, 15, 16 and 23, 1983.

The eight panels of witnesses addressed a broad range of issues including employment projections; demographics of the workplace; automation in factory and office; quality of the workplace; training and retraining of workers; regional, state and local perspectives; and speculation on future trends and effects. Witnesses were representatives from the legislative branch, academia, unions, state and local governments, science organizations, vocational associations, engineering organizations and the private sector.

Previous Congressional hearings have largely focused on the role of the Federal Government in encouraging technological innovation to improve productivity. Witnesses at these earlier hearings have urged the Federal Government to support various stages of the innovation cycle from basic research to technology transfer. In addition, they have recommended increasing government support of mathematics and science education, altering Federal tax incentives, and revising Federal patent policy to stimulate innovation and productivity. The Congress has already responded to many of these recommendations by passing appropriate legislation. There are, however, some pressing concerns beyond the stimulation of technical innovation and enhanced productivity. These concerns involve the impact of innovation and improved productivity on the nation's work force and consequently on the national economy. The connection between technology and the economic health of the nation must be thoroughly understood if the Federal Government is to identify its proper role in addressing issues involving science and technology, employment, and international competition. For this reason, the hearings examined government activities that can promote high employment and economic growth in an environment of continued technological development.

Summary of hearings

In general these hearings reviewed most of the major issues raised in the growing public and Congressional debate over the impact of technology on jobs. Eight panels of witnesses addressed a broad range of issues including employment projections; demographics of the work force; automation in factory and office; quality of the workplace; training and retraining of workers; regional, state and local perspectives; and speculation on future trends and effects. Finally, recommendations were made for government action which might ease the adjustment of the work force and the workplace to technology while promoting employment, improved productivity, and economic growth.

Committee Publication Number 98-41.

3.5(B)—Environmental Implications of Genetic Engineering

Background

The Subcommittee has followed developments in biotechnology for over a decade. This has led to a number of oversight hearings and reports on various aspects of biotechnology research and genetic engineering.

Summary of hearing

On June 22, 1984, the Subcommittee joined with the Subcommittee on Investigations and Oversight in a hearing to examine the environmental implications of recent developments in genetic engineering, particularly the introduction into the environment of new organisms with new and novel genotypes.

For a full discussion of this hearing, see section 3.7(G) of the Subcommittee on Investigations and Oversight section in this report.

Committee Publication Number 98-36.

3.5(C)—Japanese Technological Advances and Possible United States Responses Using Research Joint Ventures

Background

A number of indicators strongly suggest that the position of world technology leadership once firmly held by the United States is declining. The United States, only a decade ago, with only five percent of the world's population was generating about 75 percent of the world's technology. Now, the U.S. share has declined to about 50 percent and in another ten years, without fundamental changes in our Nation's technology policy, the past trend would suggest that it may be down to only 30 percent.

Our overseas competitors, such as Japan, France, and West Germany, appear to have learned to capitalize on scientific research more effectively than the United States. A strong economic position held by some countries has grown in the past not from fundamental scientific breakthroughs, but rather from an aggressive and very effective combination of government and industry cooperation, coordination and planning.

With specific regard to the case of Japan, some hold the view that the Japanese technological success is attributable to a government-endorsed policy of industry "targeting" by the Ministry of

International Trade and Industry (MITI) and other Japaneses agencies. This targeting may take the form of low-interest loans to companies within favored industries, tax breaks such as rapid depreciation and favorable government intervention including formal exemption from antitrust laws.

Many policy experts have claimed that the effect of these policies has been to permit favored industries to develop a mature market position with associated well-developed technological "know-how". This combination permits these favored industries to compete exceptionally well in world markets, thereby strengthening their economic position.

Many distinguished scientific and industry panels had recommended the need for some relaxation of current antitrust laws to encourage the formation of R&D joint ventures. This barrier was identified in several studies as one of the principal problems inhibiting the ability of the United States to maintain its international competitiveness. For example, the prestigious Business-Higher Education Forum had stressed in a recent study the strong need to enhance our private industry's ability to compete with foreign ventures in developing new technologies.

Summary of hearing

Two days of joint hearings were held in June 1983 by the Subcommittees on Science, Research and Technology, and Investigations and Oversight which focused on the role of joint research in Japan's success, how Japanese industry and government decide what products to produce, and how the Japanese government decides which research projects to support. The Subcommittee heard testimony from the U.S. industries that are most affected byt collective research in Japan and heard what those industries are doing in the way of joint research projects. Finally, the Subcommittee heard testimony on the influence of the antitrust laws on such ventures.

Nineteen witnesses from high technology companies, pertinent government agencies, the university community, and the antitrust bar appeared before the Subcommittee. Subsequently, legislative hearings were held on H.R. 4043, the Research and Development Act of 1983; see Chapter II, Section 2.8 for more information. P.L. 98-462, the National Cooperative Research Act of 1984 also had its origins in these hearings; see Chapter I, Section 1.8 for further information.

Committee Publication Number 98-45.

3.5(D)—The Effects of Technology on Employment and Future Growth (San Bernardino, CA)

Background

On August 8, 1983 the Subcommittee, interested in expanding on a regional awareness of the technology and employment issue, held a meeting in San Bernardino, California. This area, in particular, was chosen because of the familiarity of Southern California with problems the technological revolution presents and also because of the success of this region in taking advantage of the benefits such a revolution can provide to society. Previous oversight activities were

undertaken in the 97th Congress when the Subcommittee began examining the social, political and educational implications of an increasing high technology-oriented society. Prior to the San Bernardino meeting, seven days of hearings were held in June of 1983, dedicated to an indepth view of the various factors affecting the nation's work force as industry moves toward advanced technologies.

The objective of this regional meeting was to focus on Southern California's experience as it relates to necessary steps other regions of the country can take to encourage economic growth; and secondly, to advance the understanding of the social implications which flow from this change. The Subcommittee explored the effects new technologies will have on the number of jobs, as well as what sort of planning has been undertaken in San Bernardino and Riverside Counties to meet these social and economic changes. Particular attention was given to the role of education in training the public and our current workforce for the jobs of the future.

Summary of meeting

Seven witnesses presented testimony before the Subcommittee, providing federal, state and local government, industry and education sector insight to the issue. In general, the meeting highlighted the growing trend of students migrating into the fields of science and engineering. With this has come the need for academic institutions to make administrative and structural changes on their campuses. From the industrial perspective, testimony reflected the social and economic pressures corporations are facing in seeking to train and retrain employees.

Of particular interest to the Subcommittee was testimony received from an independent community-based non-profit organization founded in 1972. Known as "Operation Second Chance, Inc." (OSC), their School of Opportunities dramatically changed its efforts in 1979 to reflect changes needed in the American labor force. In consultation with top scientists, engineers, educators, and the private sector, OSC developed vocational education approaches for their industrial and technological training centers. This is one example of how local areas are responding to regional changes.

Committee Publication will be available.

3.5(E)—Silicon Valley and the Academic Community: Working Together To Meet Today's Economic and Scientific Changes

Background

During the FY 1984 National Science Foundation authorization hearings held by the Subcommittee, both the Administration and Members of Congress expressed interest in exploring the topic of industry-university cooperative research. As a continuum to this discussion and to increase the Subcommittee's familiarity with the current trend, a meeting was held in the Silicon Valley Area, California, on August 11, 1983, with a variety of educational institutions and corporations from the area.

During the 97th Congress, the Subcommittee held similar meetings in and around the Route 128 corridor of Boston, Massachusetts. However, given the significance of Silicon Valley in the nation's microelectronics industry, perhaps nowhere else in the coun-

try are the pursuits of pure science, applied science and industrial development so integrally intertwined. This meeting in San Jose was an opportunity for the Silicon Valley industry and academic representatives to discuss some of the successes and failures of their working relationship in order to improve and advance this vital public/private cooperation.

Summary of meeting

Conducted at the San Jose County Building, San Jose, California, six witnesses presented written and oral testimony to the Subcommittee. Congressmen Norman Mineta and Ed Zschau of the 13th and 12th districts of California attended the meeting.

Representatives from the Hewlett-Packard Company and the General Electric Company provided insight into private sector initiatives to enhance local California educational institutions, and into their corporate activities on the national level. Particularly, they focused on the utilization of the R&D tax credit program as it relates to instrumentation and equipment donations to academic institutions. Other efforts in progress include sabbaticals for industrial engineers to teach on university campuses, "adopt a local school" programs, and in-service teacher training initiatives.

Discussions with the academic community highlighted various difficulties being faced by two-year/vocational, four year and graduate institutions to meet the educational needs of an ever increasing technical world. Financial strains such as overhead costs, teacher salaries, equipment and maintenance costs were most frequently cited. The role industry-university collaborations can make in addressing the institutional pressures of academia were highlighted and noted to be ever increasing. In particular, the Dean of Engineering from the San Jose State University system spoke to the increasing need for fostering such arrangements with industry, the benefit of which serve both the private sector and the educational future of the United States.

3.5(F)—Field Hearings on Fire Prevention and Control

Background

During the 98th Congress, the Subcommittee held two field hearings on fire prevention and control issues. The hearings were held outside of Washington to elicit local views on a variety of issues including America's current fire problem and on the effectiveness of Federal Fire programs.

The first hearing was held in Pittsburgh, Pennsylvania on October 14, 1983. The second hearing was held in Mineola, New York on June 22, 1984. Witnesses were representatives from local organizations and fire victims.

Summary of hearings

The location of the hearings in Pittsburgh and Long Island provided the Subcommittee with excellent opportunities to examine the unique operations and problems associated with volunteer fire departments. The witnesses discussed a number of issues including the need for more public education on fire prevention, the need to step-up dissemination efforts from the U.S. Fire Administration

and National Fire Academy, the need to re-evaluate the Federal role in preventing and controlling fires and the need for tax credits and other incentives to be given to citizens and industry for installing good fire prevention and emergency equipment.

Committee Publication Number 98-98.

3.5(G)--Developing Technologies for Television Captioning: Benefits for the Hearing Impaired

Background

As part of its jurisdiction, the Science, Research and Technology Subcommittee has had a continuing interest in exploring the ways in which the Nation's scientific knowledge and technological expertise could be utilized for the benefit of handicapped individuals.

On November 9, 1983, the Subcommittee held a hearing on Developing Technologies for Television Captioning: Benefits for the Hearing Impaired. The purpose of the hearing was to provide a forum to discuss the variety of developing technologies related to television captioning for the hearing impaired.

Summary of hearings

Testimony was presented by interested Members of Congress, representatives from the television broadcasting networks, industry, deaf organizations, and captioning groups. The witnesses were asked to comment on both existing and emerging technologies, including the line 21 closed-captioning system and teletext, one of the new electronic text technologies. Demonstrations of both of these technologies were presented, and the costs and problems involved in their production were discussed at length. The unavailability of teletext to the deaf community at the present time evoked criticism directed to those networks not offering the presently available line 21 closed captioning.

Committee Publication Number 98-51.

3.5(H)—Mathematics and Science Education at Primary and Secondary Levels

Background

The United States economy competes in a global marketplace. Several studies of the American eduction system have clearly shown that in comparison to the school students of its major economic competitors (i.e., Japan, West Germany, Soviet Union), U.S. students rank poorly in regard to math and science competence and the numbr of courses required in these areas. It is no coincidence that Japan and West Germany have been among the leaders in economic growth productivity worldwide while the U.S. has slipped. Clearly, economic prosperity and national security in the future will depend in large measure on sound math and science education for all precollege students. In this context the Subcommittee on Science, Research and Technology conducted a hearing on February 10, 1984 in Pittsburgh, Pennsylvania on the topic of science and math education in primary and secondary schools and how new technology in the workplace could require a change in the direction of math and science education.

Summary of hearings

Witnesses representing local school board officials and administrators, along with primary and secondary school math and science teachers, provided a description of the quality and direction of math and science education. These witnesses commented upon new ideas and programs to improve precollege math and science instruction, as well as the findings and recommendations of the public and private panels established to look into this area.

Since technology is advancing at a blinding rate, tremendous changes in the workplace, especially in the manufacturing process, will continue to evolve. As a result, the members of tomorrow's workforce will be required to have a minimum understanding of scientific ideas. In keeping with this, industry representatives addressed the present and future personnel needs of local industry. Issues such as the future direction of industry as it is affected by new technology, necessary work skills, interface between industry and local schools were examined. Further, witnesses from Allegheny County Community College discussed the education programs at the community college level and how they related to local industry. Issues such as technical curriculum, instructional equipment, and the math and science ability of entering students was discussed.

Another panel of witnesses included experts from the University of Pittsburgh and Carnegie-Melion University who are involved in research into teaching and learning. These witnesses discussed the skills necessary to learn, new research in the learning process, and the development of new education techniques.

Committee Publication will be available.

3.5(I)—Implications on International Scientific Cooperation of the United States Withdrawal From UNESCO

Background

On March 15, 1984, the Subcommittee and the Subcommittee on Natural Resources, Agriculture Research and Environment held a joint hearing to review the potential impact on both international scientific cooperation and American science of a U.S. withdrawal from the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Summary of hearing

The purpose of the hearing was to review the process by which the decision to withdraw was made, with particular focus on the evaluation of the impact on American science. Witnesses discussed past experiences of U.S. scientists in conducting research under UNESCO's auspices and the available alternatives to continue U.S. participation in the international organization.

The Subcommittee on Natural Resources, Agriculture Research and Environment (NRARE) held another hearing on U.S. withdrawal from UNESCO on March 8, 1984. The U.S. Ambassador to UNESCO, Jean Gerard, was the witness. For more information on the March 8 and 15, 1984 hearings, refer to section 3.3(O) of the Subcommittee on Natural Resources, Agriculture Research and Environment.

Committee Publication Number 98–120.

3.5(J)—The Availability of Japanese Scientific and Technical Information in the United States

Background

Japan is making valuable contributions in the advancement of science and technology and it appears that the United States is not taking advantage of the scientific information that is available. The United States has traditionally been the scientific and technological leader in the world, but Japan now ranks second as an economic power in the free world, and third in research and development spending. In response to these concerns, the Subcommittee on Science, Research and Technology held two days of hearings in March 1984 on the availability of Japanese scientific and technical information in the United States.

Summary of hearings

On March 6 and 7, 1984, the Subcommittee heard testimony from representatives of industry, academia, and the Government to determine the current level of activity in the United States and to assess what role, if any, the Federal government should play to increase access to Japanese scientific and technological information (STI).

Most participants at the hearings agreed that there exists an immediate need for greater access to this Japanese STI and that current efforts by Federal agencies, universities, and private organizations are inadequate to overcome existing barriers to acquiring, translating, and disseminating Japanese STI.

Recommendations from witnesses included more support for translation services and library collections and increased funding for the National Technical Information Service to expand its work in assisting public and private sector organizations in accessing Japanese STI. Emphasis was given to the need for Federal assistance in the area of Japanese language instruction to increase the number of qualified technical translators. Suggestions were also made for studies to be done to assess the current uses and need for Japanese STI in order to supply detailed information necessary for sound future policy-making.

Committee Publication Number 98–95.

3.5(K)—Earthquakes in the Eastern United States

Background

Earthquakes are not merely a West Coast phenomenon. On the average a damaging earthquake occurs in the eastern United States every 25 years, and a large one occurs about every 50 to 100 years. The largest earthquake ever recorded in the contiguous 48 states was in New Madrid, Missouri in 1811. The East is susceptible to severe damage by future earthquakes.

Summary of hearings

On May 23 and September 12, 1984, the Subcommittee joined the Subcommittee on Investigations and Oversight for hearings on the

potential for a damaging earthquake and the hazards associated with earthquakes in the eastern U.S. The hearings examined the status of scientific research on eastern earthquakes and reviewed the federal program on earthquake hazard reduction and preparedness for the eastern U.S. Witnesses were representatives from the Federal Government and academia. For more detailed information about the hearings, refer to section 3.7(P) of the Subcommittee on Investigations and Oversight.

Committee Publication will be available.

3.5(L)—Scientific Communication and National Security

Background

The Federal government's concern for maintaining the lead of the United States over the Soviet Union and its allies in militarily critical technology has led it to attempt to control unwanted technology transfer. These attempts have extended to control of open scientific communication, as well as the transfer of technical data, physical devices, and blueprints. In 1982, the Corson Panel (an independent ad hoc committee of the National Academy of Sciences) reviewed the evidence on the costs and benefits of controls and suggested guiding principles for policy. The objectives of the May 24, 1984 hearing were as follows: (1) to discuss the Corson Report and its recommendations; (2) to discuss the effects of existing and proposed restrictions on scientific research and exchange; (3) to assess developments in this area since an earlier Subcommittee hearing held in March, 1982, and (4) to discuss alternatives for achieving a balance between the goals of national security and scientific freedom, as well as recommendations for policy development, implementation and coordination to achieve these goals.

Summary of hearing

During the May 24, 1984 hearing (held jointly with the Subcommittee on Investigations and Oversight) a distinguished list of witnesses presented testimony. All of the witnesses shared their unique perspectives on the effects of scientific communications brought about by national security restrictions. The first witness was Mr. Zschau, a Member of Congress from California. Mr. Zschau, the former chief executive of a successful high technology firm, described the dramatic growth of technology-based companies in California's Silicon Valley area. Also, he presented his views on the effect on scientific progress of any restrictions on open exchange of scientific findings. Mr. Zschau was followed by a panel comprised of representatives from the academic community. This panel included: Dr. Dale Corson, President Emeritus, Cornell University and Chairman of the Government-University-Industry Research Roundtable; Dr. Paul E. Gray, President, Massachusetts Institute of Technology; and Mr. Thomas Ehrlich, Provost of the University of Pennsylvania. The witnesses provided their views on how the university research community is affected by Federal regulations, particularly those regulations imposed by the Department of Defense.

The next panel included Dr. Roland W. Schmitt, Senior Vice President, Corporate Research and Development for General Elec-

tric Company and Chairman of the National Science Board; and Dr. J. Leslie Glick, Chairman and Chief Executive Officer of Genex Corporation. The two witnesses gave a perspective of the private sector in dealing with restrictions on corporate research, particularly restrictions issued by the Department of Commerce under authority granted by the Export Administration Act. The final panel of witnesses gave the viewpoints of various Federal agencies involved in this issue. The government witnesses were: Dr. Edith W. Martin, Deputy Under Secretary of Defense for Research and Engineering; Mr. William T. Archey, Acting Assistant Secretary of Commerce for Trade Administration; and Dr. James S. Kane, Deputy Director of Energy Research, Department of Energy. Of special note is the statement of Dr. Edith Martin, in which she announced a new Federal policy, still in draft form, regarding the classification of research sponsored by the Federal Government. The draft policy states that the mechanism for control of fundamental research in science and engineering at universities and Federal laboratories is classification. No restriction may be placed on the conduct or reporting of research that has not been classified at the start of the project.

This issue is of ongoing interest to the Subcommittee on Science, Research and Technology. In the 99th Congress the Subcommittee will continue to monitor developments in this area and possibly conduct another hearing to facilitate further examination.

Committee Publication Number 98-100.

3.5(M)—Federal Organization for Technological Innovation

Background

As part of the Subcommittee's continuing interest in the subject of innovation and productivity, four days of hearings were held in June 1984 on a number of legislative proposals concerning the Federal role in technological innovation. The hearings focused on proposed federal organizations, studies, and R&D activities designed to encourage and support U.S. industrial competitiveness in the international marketplace.

Summary of hearings

On June 7 and 12, 1984, the hearings focused on H.R. 4361, the Advanced Technology Foundation Act, and H.R. 481, the National Technology Foundation Act, legislation which would establish a technology foundation as a Federal agency; and on H.R. 1243, the Economically Strategic Industrial Research and Development Act. and H.R. 2525, the National Commission on Technological Innovation and Industrial Modernization, legislation which would authorize studies of economically strategic technologies.

On June 13, and 14, 1984, the focus was on legislation aimed at encouraging the development of robotics and automated manufacturing systems in U.S. industry. The legislation included the Manufacturing Sciences and Technology Research and Development Act, H.R. 4415 and Senate companion bill S. 1286, and the Robotics and Automated Manufacturing Systems Research and Education Act, H.R. 4047.

The central question on all four days was: Is the active participation of the Federal Government necessary for the advancement of American technology? Witnesses, including several Members of Congress, officials from both past and present Administrations, industry and university representatives, and leaders from professional organizations, responded with both pro and con statements.

On the issue of establishing a new Technology Foundation, opinions ranged from support for the need for an independent agency solely responsible for technology development to the philosophy of "let the marketplace settle the issue." In the discussion of the bills initiating studies of economically strategic technologies, there appeared to be less support from the witnesses. The legislation advocating federal support for research and development related to automated manufacturing process technology appeared to have the most bipartisan support among the members and the witnesses. Recommendations from witnesses resulted in a Committee draft bill combining provisions from both H.R. 4415, S. 1286 and H.R. 4047 entitled the Manufacturing Sciences and Robotics Research and Development Act, S. 1286. For more information on this legislation, refer to Chapter II, Section 2.15.

Committee Publication will be available.

3.6—The Subcommittee on Transportation, Aviation and Materials

3.6(A)—Joint Services Advanced Vertical Lift (JVX) Program

On May 2, 1983, the Subcommittee on Transportation, Aviation and Material held an oversight hearing on the subject of the Joint Services Advanced Vertical Lift (JVX) program. This program is a Defense Department effect to develop and produce an aircraft which combines vertical lift capability with airplane cruise efficiency in order to satisfy the various mission requirements of the military services. The hearing also focused on NASA-developed technology of the tilt rotor research aircraft, capabilities of the technology, and how it relates to future military as well as civilian needs.

Committee Publication Number 98-11.

3.6(B)—Critical and Strategic Materials: Oversight of P.L. 96-479, the National Materials and Minerals Policy Research and Development Act

P.L. 96-479 arose from the recognized need for high level coordination of the many materials and minerals activities within the Federal Government.

On May 17-19 and June 24, 1983, the Subcommittee on Transportation, Aviation and Materials held hearings to review and assess the various programs and activities of the government in accordance with the direction and policy set forth in this Act, including the Presidential program and report made to Congress pursuant to that Act.

Committee Publication Number 98-48.

3.6(C)—Highway Transportation Infrastructure Research and Technology

On June 9, 15, and 16, 1983, the Subcommittee on Transportation, Aviation and Materials held a joint hearing with the Subcommittee on Investigations and Oversight to assess the use of improved technologies, materials, and construction methods to ensure that highway funds are used in the most cost-effective manner possible; and to assess whether the scope, organization, direction, effectiveness, and funding of current research in highway transportation is adequate to meet the challenges of new highway investment programs to economically and effectively rebuild the Nation's highway transportation infrastructure. Also see Section 3.7(F) of this report.

Committee Publication Number 98-22 and 98-BB.

3.6(D)—Aviation Safety

The Subcommittee on Transportation, Aviation and Materials has had a long-standing interest in assuring the use of new technology to improve aviation safety. As a result of several incidents involving major airline aircraft, the Subcommittee called hearings on June 27 and July 18, 1983 to review aircraft maintenance problems, cabin fires, and the safety of our airport systems in general. A report based on these hearings was issued which presents findings and recommendations to support continued improvements in aviation safety through the application of research and technology. As a result, the FAA instituted new regulations on cabin seat flammability standards, and fire extinguishers in lavatories.

Committee Publication Numbers 98-15, 98-24 and 98-S.

Aircraft navigation technology was specifically addressed in a hearing held September 19, 1983, which resulted in the expedited use of the Satellite Directed Navigation System, GPS, by civil aviation users, leading to increased safety and more efficient use of airspace.

Committee Publication Number 98-33.

Further hearings held in March, May and July of 1984 addressed the safety of Washington National Airport, emerging ultralight aircraft technology and public safety, aircraft navigation and landing technology, and wind shear detection technology. The Subcommittee's inquiries led to installation of new approach equipment and the lengthening of the overrun at National Airport.

Committee Publication Number 98-76, 98-111, 98-109, 98-112.

3.6(E)—Alternative Fuels for General Aviation

The price and availability of fuel continues to be a major barrier to the free expansion of general aviation. With sales of general aviation aircraft in a depressed state, the development of alternative fuels such as liquid methane, ethanol, methanol, and automobile gasoline can help spur that industry back to health. The Subcommittee conducted a hearing on April 26, 1984 to determine promising candidates for alternative general aviation fuels, and to encourage rapid progress in their development.

Committee Publication Number 98-40.

3.6(F)—Methane Transportation RD&D Act of 1980—Oversight

The Methane Transportation Research, Development and Demonstration Act of 1980 (P.L. 96-512) provides for advanced and accelerated research and development of methane-fueled vehicle design and related technologies, and for the facilitation and removal of barriers to the use of methane-fueled vehicles as an alternative to gasoline or diesel-powered vehicles, where practicable. On April 16, 1984, the Subcommittee on Transportation, Aviation and Materials met to consider modifications in this program to improve and refocus the demonstrations envisioned under this law in order to more effectively deal with some of the more pressing issues of methane fuel, such as emissions and refueling.

Committee Publication Number 98-92.

3.6(G)—Rail Track Safety

Relative to our nation's rail system, indications have been that the system is being modernized and signicantly improved. At the same time, however, large numbers of derailments and fatal accidents have occurred. Thus, the Subcommitte on Transportation, Aviation and Materials called a hearing on July 27, 1984 to focus attention on rail safety with an emphasis on railroad track and roadbeds, and the use of modern technology inquire to inquiry resulted in the Department of Transportation ordering an Amtrack system-wide track assessment.

Committee Publication Number 98-103.

3.6(H)—Communications

Subliminal communication is a process by which an individual is presented with information without their being aware of it, but to which they make a selective response. In recent years, there have been a number of scientific advances in the area and an increase in its application. On August 6, 1984, the Subcommittee on Transportation, Aviation and Materals met to take a closer look at the use of subliminal communication technology given the serious moral, ethical and legal implications posed by some of these recent innovations.

Committee Publication Number 98-105.

3.6(I)—Computer and Communications Security and Privacy

The immense growth of computer usage by government, business, private organizations and individuals led to the Subcommittee on Transportation, Aviation and Materials conducting hearings on the issue of computer and communications security and privacy in September and October of 1983. As a follow-up, a report was issued on the ramifications of that growth and ways to cope with the potential dangers of those ramifications. The Subcommittee recommendations called for a national commission to comprehensively examine a vast array of multi-jurisdictional issues that arise from consideration of this subject. On September 24, 1984, the Subcommittee again met on the issue to update the record and review the results of its efforts (A hearing record will be available).

Committee Publication Numbers 98-46, 98-123, and 98-AA.

3.7—The Subcommittee on Investigations and Oversight

3.7(A)—Shift Work Scheduling and Biological Clocks

On March 23 and 24, 1983, the Subcommittee held hearings on the health, safety and productivity effects of shift work schedules and how research on the body's internal time clock (circadian rhythms) holds promise to ameliorate some effects of shift work. Witnesses included shift workers, scientists studying biological rhythms, representatives from organized labor and management, and federal agencies concerned with aviation and nuclear power plant safety.

Committee Publication Numbers 98-7 and 98-U.

3.7(B)—Hazardous Waste Disposal

On March 30 and May 4, 1983, the Subcommittee held hearings to look at incentives for development and use of technologies for hazardous waste disposals as alternatives to land disposal

Jackson, Tennessee was the site of the first hearing because of proposals to locate new sites in the area. Testimony was received from scientists, government officials, and industry representatives about the need for and feasibility of alternatives, such as incineration, chemical or biological degradation and production process improvements to reduce the amount of waste generated.

Representatives from the Congressional Office of Technology Assessment and the National Academy of Sciences also testified concerning recently completed studies on alternative technologies.

The consensus of the witnesses was that landfill disposal of hazardous waste raised many significant environmental problems, and should not be encouraged. Data was also presented that alternative technologies for waste disposal are available to reduce dependence on landfills, but that, until hazardous waste disposal regulations are adequately implemented and enforced, there will be little economic incentive to use them.

On May 4, 1983, the Subcommittee reconvened in Washington to consider how to make landfill disposal less attractive to industry and alternative technologies more attractive. A second focus of the hearing was to consider the availability of alternative technologies to treat and dispose of PCBs and dioxin, two very hazardous substances.

The first panel of witnesses addressed the problems posed by PCBs and dioxin. The second panel presented testimony from the industry and interest group perspective. The final panel discussed the approaches by the States to the problem of toxic waste disposal.

Committee Publication Number 98-28.

3.7(C)—Job Forecasting

On April 6 and 7, 1983, the Subcommittee held hearings to examine job forecasting methods, in order to learn how accurately the occupations for the future can be predicted, and the kinds of skills and training American workers will need to fill them. Witnesses at the first day of hearings included futurists and occupational forecasters from both Government and private industry.

The second day of hearings focused on the potential impact of job forecasting, looking at the connection between predicting new jobs and developing training and retraining programs to prepare America's workers for those jobs. The witnesses all had varied experiences with the problems of retraining and adapting to new technologies.

Committee Publication Number 98–6.

3.7(D)—Organ Transplantation

On April 13, 14 and 27, 1983, the Subcommittee held hearings on human organ transplantation. These hearings, together with a hearing on kidney transplantation held in the 97th Congress, and additional hearings held on November 7 and 9, 1983, provide an extensive overview of organ transplantation.

Specific topics focused on at the hearings include advances in transplant surgery, including discovery of a new immunosuppressive drug (Cyclosporin-A) that has led to dramatically improved transplant success rates; availablility of human organs for transplant surgery, including available systems for organ donation, retrieval and distribution; the effect of providing organs to foreign nationals and the sale of human organs or organ availability; and cost financing and insurance for transplant surgery.

As a result of the Subcommittee's activities, the Chairman and Ranking Minority Member of the Subcommittee, with others, introduced a bill to provide for the improvement of the organ retrieval system so that the shortage of organs for transplantation could be reduced. The President signed the National Organ Transplant Act in late 1984.

The Subcommittee's activities also led to the passage of amendments to the medical insurance program for military dependents (CHAMPUS) facilitating transplant surgery for dependents of those on active duty.

Committee Publication Numbers 98–16 and 98–71.

3.7(E)—Joint Industry/University Cooperation With Federally Supported Research Facilities

On May 13, 1983, the Subcommittee held a field hearing in Las Cruces, New Mexico, to examine the potential benefits of the joint use of Federally-supported research facilities by industry and academia. The Subcommittee learned that the long tradition of industry-university cooperation in education and research has been closely intertwined in recent years, particularly in heavily financed research agreements.

Building on the example of New Mexico's Rio Grande Valley, the Subcommittee found that industry can benefit its own research and

development operations and perform a public service by helping meet the instrumentation needs of universities and assisting in the improved quality of students' education. The Subcommittee also explored the idea that joint cooperation may reduce the taxpayers' cost of running Federally-supported research facilities as well as benefiting from the technology transfer process and resulting increases in innovation and productivity.

Committee Publication Number 98-32.

3.7(F)—Transportation Infrastructure Research and Technology

On June 9, 15, and 16, 1983, the Subcommittee conducted joint hearings with the Subcommittee on Transportation, Aviation and Materials on transportation infrastructure, particularly relating to U.S. highways.

The purpose of the hearings was to (1) assess the current status of highway transportation infrastructure research activities and fundings; (2) explore effective ways to enhance national priorities for on-going transportation infrastructure research programs; (3) examine ways to promote research progress; (4) encourage applications of research findings; and (5) achieve timely results from research efforts.

As a result of the hearings, the Subcommittees issued a report in May of 1984 which made a number of findings concerning the improvement of the state of transportation infrastructure research and technology deployment. First, the overall goals and objectives of existing transportation research programs were not well related to the overall goals of the transportation system. Second, the U.S. highway infrastructure has been deteriorating at a more rapid rate in recent years. Nearly 10% (4,000 miles) of the Interstate Highway System is in need of immediate or near term repair. By 1995, some 26,000 miles, or 56%, will be in the same condition. Third, support for highway research has declined significantly in the last 20 years, decreasing to less than 0.15% of total highway spending. Fourth, current highway research programs emphasize small-scale projects, and are fragmented to the point where it is not possible to produce timely solutions to the complex technical problems of national application. Fifth, current research programs to increase the quality and durability of a number of high cost highway materials show the most promise for decreasing the cost of maintaining the highway infrastructure. Sixth, many of the current problems in highway infrastructure research programs seem to be the result of the low priority such programs have received from the Federal Government.

Committee Publication Numbers 98-22 and 98-BB.

3.7(G)—Environmental Implications of Genetic Engineering

A joint hearing with the Subcommittee on Science, Research and Technology was held on June 22, 1983 to examine the environmental implications of genetic engineering. The purpose of the hearing was to consider the risks and benefits associated with the deliberate introduction into the environment of genetically engineered organisms, as well as the adequacy of the existing federal regulatory

framework to evaluate the potential environmental risks that may be presented by such releases.

Biotechnology is rapidly progressing from a laboratory science to a commercial venture in some fields. As modified microorganisms and new plants are being developed, field scale testing and commercial applications are envisioned. These new organisms will likely range from genetically modified plants for enhancing the world food supply to genetically engineered microbes for hazardous waste clean-up. While these organisms offer significant benefits, it is presently unclear what effect some of these may have on the environment into which they will be introduced.

Impetus for the hearing came from concern that enviromental implications may not be sufficiently considered by the government before the deliberate release of genetically engineered organisms is authorized because the regulatory structures have not kept pace with the advance of biotechnology's products into the marketplace.

The Subcommittee on Investigations and Oversight issued a staff report in February of 1984 which concluded that although the probability of environmental damage from the introduction of a genetically engineered organism is low, the damage that could occur is potentially great; predicting the specific type, magnitude or probability of damage will be extremely difficult; and the current regulatory framework does not guarantee that adequate consideration will be given to potential enviromental effects of deliberate release. The report recommended that EPA's expertise and efforts in biotechnology be enhanced, and that an interagency task force be established to review proposals and develop a risk assessment program and guidelines for releases.

Committee Publication Numbers 98-36 and 98-V.

3.7(H)—Japanese Technological Advances and Research Joint Ventures

The Subcommittee, in conjuction with the Subcommittee on Science, Research and Technology, conducted hearings on June 29 and 30, 1983, to review ways to encourage a greater degree of collaborative research by U.S. industry, as a way to increase research output, economic productivity and international competitiveness. For a more detailed description of this investigation, see section 3.5(C) of the Subcommittee on Science, Research and Technology.

Committee Publication Number 98-45.

3.7(I)—Postharvest Technology

On July 25, 1983, the Subcommittee conducted a hearing in Decatur, Illinois to examine the current state of postharvest research and technology as a component of the overall agricultural research program in the United States. Witnesses included agricultural interest groups, private analysts, academicians and large and small agricultural concerns.

The principal finding was that while the postharvest phase of the agricultural economy was the most potent ground for making productivity gains in the agricultural economy, it received a disproportionately small share of the overall research budget, especially as it relates to wheat and soy bean crops.

Committee Publication Number 98-50.

3.7(J)—Computer and Education

On September 28 and 29, 1983, the Subcommittee conducted hearings to examine the benefits and problems of introducing and integrating microprocessors into elementary, secondary and post-secondary education in the United States.

In the 97th and 98th Congresses, there were a number of proposals offering tax incentives to encourage schools to obtain microprocessors. However, less attention has been paid to the ways in which computers could be used in the schools and the potential problems of integrating microprocessors into the curriculum.

During the course of the hearings, the Subcommittee heard from academics, education and teacher groups, as well as the Department of Education. Testimony identified a number of areas which should be addressed, including the need for upgrading teacher computer skills, the need for better curriculum development utilizing complete technology; the need for a program to finance the acquisition and utilization of computers; the problem of disparity of access between various school systems in differing communities; questions about the adequacy of available software; and about the role of the Federal Government.

In partial response to these proposals, the Subcommittee Chairman introduced legislation to create a revolving venture capital fund to provide seed money for the development of better educational software, known as the National Education Software Corporation (H.R. 4628). The legislation was referred to the Committee on Education and Labor and the Committee on Science and Technology.

Committee Publication Number 98–64.

3.7(K)—Forecasting Technology for Water Management

On October 13 and 14, 1983, the Subcommittee convened in Boulder City and Las Vegas, Nevada, respectively, to conduct hearings on flood control along the Colorado River, and to look specifically at the Federal Government's ability to predict precipitation and snow accumulation on a long-range basis.

During the months of May and June, 1983, the Colorado River had water flows of almost unprecedented proportions. As a result, a number of recreational facilities, farms, ranches, and private residences were flooded in the Lower Basin, below the river's system of dams. Many had complained that the Bureau of Reclamation of the Department of the Interior, which manages the river, had given inaccurate forecasts to river concessionnaires.

While the hearings partially exonerated the Bureau, they also demonstrated that there are inadequacies in the federal system of forecasting for the purposes of river management and agriculture. First, the agencies of the Federal Government are not as well coordinated as they need to be. Second, the Federal Government needs more snow-sensing and measuring devices so that it has sufficient data to make reasonable forecasts. Third, the Federal Government needs to improve its forecasting models.

Committee Publication Number 98–72.

3.7(L)—Emergency Management Information and Technology

On November 16 and 17, 1983, the Subcommittee held hearings and a national workshop on the role of information management in the Nation's ability to cope with emergency situations. These two days concluded the Subcommittee's four-year study of the role that information technology can play in both anticipating and responding to natural and man-made disasters.

At the request of the Subcommittee, the Congressional Research Service of the Library of Congress prepared a report which presents a summary and analysis of these activities and contains several recommendations designed to improve communications during disaster operations.

Committee Publication Numbers 98-63 and 98-HH.

3.7(M)—Animal Sciences

For several years, the Subcommittee has had a strong interest in scientific developments affecting agriculture. During the 97th Congress the Subcommittee held hearings on potential applications of advances in recombinant DNA technology and genetics on agricultural sciences. At the hearings, the Subcommittee heard from leading experts in academia, industry and government about the rapid progress of science in certain areas of livestock breeding, such as twinning and embryo transplantation, and about the difficult tasks remaining as the scientific community sought to further unravel the mysteries of animal and plant genetics.

Because of the potentially enormous impact of genetic engineering and other scientific advances in the agricultural sector, the Subcommittee requested the Congressional Research Service of the Library of Congress to prepare a summary for both lay and scientific readers. In October of 1983, the Subcommittee released the summary entitled, "Animal Sciences: Advances in Reproductive and Health Technologies."

Committee Publication Number 98-Q.

3.7(N)—Plant Sciences

Because of the great interest in the Animal Sciences report (98-Q), the Subcommittee asked the Congressional Research Service to prepare a similar primer describing the applications of advances in biotechnology to agriculture. As a result, in October of 1984, the Subcommittee released the CRS report entitled, "Recent Advances in the Plant Sciences: Applications to Agriculture and Agricultural Products."

Committee Publication Number 98-II.

3.7(O)—Carbon Dioxide and the Greenhouse Effect

On February 28, 1984, the Subcommittee held a joint hearing with the Subcommittee on Natural Resources, Agriculture Research and Environment on current developments regarding carbon dioxide and the greenhouse effect.

The hearing objectives were to (1) examine the results of recent research into the greenhouse effect caused by increasing amounts of carbon dioxide and other trace gases in the atmosphere; (2) ex-

plore research priorities to reduce uncertainties about potential changes and their consequences; and (3) assess the scope and direction of the Department of Energy carbon dioxide research program. For a more detailed description of these hearings, see section 3.3(N) of the Subcommittee on Natural Resources, Agriculture Research and Environment.

In October of 1984, the Subcommittees released a report prepared for them by the Congressional Research Service of the Library of Congress which summarizes the status of information on the increasing atmospheric carbon dioxide concentration and the resulting impact on the climate. The report, entitled, "Carbon Dioxide, the Greenhouse Effect, the Climate: A Primer," provides a sound background necessary to understand the scope of the issues involved.

Committee Publication Numbers 98–119 and 98–CC.

3.7(P)—Earthquakes in the Eastern United States

The Subcommittee held two joint hearings with the Subcommittee on Science, Research and Technology on May 23 and September 12, 1984, on the research on earthquakes in the Eastern United States and the potential impact on structures and lifelines.

The objectives of the hearings were to: (1) examine the status of scientific research on earthquakes in the Eastern United States; (2) review the federal program on earthquake hazard reduction and preparedness for the Eastern United States; (3) review the damage projections of future earthquakes; and (4) explore the areas where additional research is needed.

In the United States, most attention on earthquakes is focused on California. However, on the average, a damaging earthquake occurs in the Eastern United States every 25 years, and a large one occurs about every 50 to 100 years. The hearings are also described in Section 3.5(K) of the Subcommittee on Science, Research and Technology.

Committee Publication will be available.

3.7(Q)—National Security Considerations and Scientific Communication

The Subcommittee, in conjunction with the Subcommittee on Science, Research and Technology, has conducted a longstanding review of proposals to restrict the flow of scientific information as a result of fears about unwanted technology transfer to Eastern Bloc countries. For a more detailed description of this investigation, see section 3.5(L) of the Subcommittee on Science, Research and Technology.

3.7(R)—Oncogenes

Scientific researchers have established that certain genes (oncogenes) play a significant role in the onset and initiation of cancer. On June 6, 1984, the Subcommittee held a hearing to learn more about this research and to assess its significance of diagnosis, treatment, and cure of cancer. The objectives of the hearings were to (1) explore our knowledge of the significance of oncogenes in cancer

research; (2) examine the status of research on oncogenes; and (3) better understand the practical applications of research findings and to determine a realistic timeframe for general patient treatment.

Witnesses included representatives from leading organizations in cancer research, and academic and industrial researchers.

Committee Publication will be available.

3.7(S)—Alternative Fuel Technologies

The Subcommittee conducted two field hearings on scientific and economic issues associated with production and distribution of alcohol fuels. The first hearing was held in Decatur, Illinois on July 6, 1984, and the second in Clovis, New Mexico on August 14, 1984.

Witnesses from agribusiness, academia, agricultural analysts and relevant interest groups testified on the necessity and economic benefits to be derived from continuing the existing gas excise tax exemptions for alcohol based fuels.

Committee Publication will be available.

3.7(T)—Human Embryo Transplantation

On August 8 and 9, 1984, the Subcommittee held hearings to explore the scientific, ethical, and legal questions involved in the development and use of new reproductive technologies.

The first day of hearings focused on the development, applications, and rapid growth of in-vitro fertilization and embryo transfer. The legal issues posed by these new techniques were also discussed.

The second day of hearings dealt with two new developments in the field in-vitro fertilization associated with freezing of embryos (cryopreservation), and embryo transfer from one woman to another (lavage). Two physicians and their patients discussed these methods.

The hearings were concluded by a panel of ethicists who discussed conflicts and values presented by the applications of these developments.

Committee Publication will be available.

3.7(U)—Alzheimer's Disease

Subcommittee held three days hearings on Alzheimer's Disease, in Johnson City, Tennessee on August 30, and in Washington, D. C. on September 19 and 20, 1984.

The objectives of the hearings were to (1) examine the status of scientific research in the causes, cures, care and treatment of the disease; (2) explore the areas where additional research is needed; and (3) inquire into the systems of health care including home, community, and specialized intermediate care units for Alzheimer's pateints.

Alzheimer's Disease is an organic brain disease that affect 5 to 15 percent of people over the age of 65. The total number of victims is estimated to range from 1.2 to 4 million. Because of the aging population in the United States, the number of persons afflicted by Alzheimer's is expected to grow rapidly.

The cause of the disease is not known. However, several factors are being investigated as possibie causes, including heredity, infectious agents such as a slow acting virus, environmental toxins including aluminum, and chemical defects in the brain. Moreover, there is no known cure or prevention.

The family and friends of Alzheimer's patients—rather than nursing homes—are estimated to attend to 80 percent of the long-term needs of patients in the United States. Alzheimer's Disease also imposes severe financial stress on families. For example, a diagnosis costs from $300 to $2,000 per patient and the cost for care, because of the need for 24-hour supervision, is approximately $30,000 per patient per year.

Beyond the financial and medical burdens impsed by those who develop this disease, are the severe emotional strains faced by families and friends. Alzheimer's is more common with advancing age, affecting more than 20 percent of those over age 80. The disease may last from a few years to a few decades. The patient dies with the disease, not from it.

Committee Publication will be available.

3.7(V)—Management Practices at the Federal Emergency Management Agency

In the Spring of 1984, the Subcommittee received numerous allegations concerning mismanagement at the Federal Emergency Management Agency (FEMA). The complaints focused on FEMA's National Emergency Training Center (NETC) in Emmitsburg, Maryland. In March of 1984, the General Accounting Office (GAO) was called in to investigate these allegations.

On August 1, 1984, the Subcommittee held a hearing and received testimony from GAO on its findings. Additional witnesses included current and former employees of FEMA, as well as contract personnel. Following this hearing, the agency official responsible for the operation of NETC resigned.

In the Fall of 1984, the Subcommittee released documents which indicated possible wrongdoing by FEMA Headquarters personnel as well. A second hearing was held December 12, 1984 concerning the Subcommittee's findings to date.

The investigation is continuing.

Committee Publication will be available.

3.8—The Subcommittee on Space Science and Applications

3.8(A)—Commercialization of Meteorological and Land Remote-Sensing

Seven hearings were conducted jointly by the Subcommittee on Space Science and Applications with the Subcommittee on Natural Resources, Agriculture Research and Environment during 1983. The focus of these hearings evolved from the earlier phase investigating activities of the Administration and the Department of Commerce in the area of commercializing land and weather satellites. In April of 1983, Subcommittee efforts turned to development of legislation to guide commercialization process. Language had been adopted in Title II of P.L. 98-52, FY 1984 authorizations for NASA, that laid the groundwork for Congress to begin formulating policies and procedures to guide, by legislation, the commercialization process. During the hearings, the Subcommittees obtained testimony from a broad array of witnesses including the Secretary of Commerce and NOAA witnesses, economists, private-sector parties who may at some point have been interested in becoming Landsat operators and Landsat data users.

Five of these hearings, held on April 14, June 21 and 28, and July 14 and 21, 1983, discussed the proposed commercialization of both Landsat and weather satellites. The decision to consider commercialization of weather satellites stirred controversy because this system affects the safety of lives and property, and the Federal Government uses as much as 95% of the data provided. (On the other hand, the government represents 25% of the Landsat market.) During the hearings, the Subcommittee heard overwhelming evidence that the weather satellite system should continue to be operated by the Federal Government. Subsequently, the decision to seek commercialization of weather satellites was reversed.

The hearings focused as well on issues surrounding the commercialization of Landsat, including the size of the data market and data continuity, national security considerations, foreign relations with nations who use or will be using Landsat data, the Request-for-Proposal (RFP) process and anti-trust considerations, the nature of the role of government after transfer, and the need for Congressional action. These hearings served to clarify the issues and led to the drafting of legislation.

Further hearings were conducted on November 8 and 9, 1983, to take testimony on a draft bill entitled, "The Land Remote-Sensing Commercialization Act of 1983." This bill would set the policies, procedures, conditions and limitations that were envisioned in Title II of the 1984 NASA authorization bill, addressing concerns about data continuity and data quality, "open skies" and national security. The bill, Public Law 98-365 (H.R. 5155), is discussed in Chapter I, Section 1.5.

The review of draft legislation on the land remote-sensing commercialization issue continued in 1984, with a hearing conducted jointly with the Subcommittee on Natural Resources, Agriculture Research and Environment on March 6, 1984. The purpose of the hearing was to take testimony on H.R. 4836, the Land Remote-Sensing Commercialization Act of 1984, a bill to set policies, procedures, conditions, and limitations on commercialization of land remote-sensing as foreseen by the Bateman amendment to Title II of P. L. 98–52.

The Subcommittees obtained testimony from the Chairman of the Source Evaluation Board (SEB) for Civil Space Remote Sensing of the Department of Commerce, representing the Administraiton. The Source Evaluation Board carries out the Request-for-Proposals (RFP) process. The witness cited areas where the bill and the goals of the process are similar, and points where the two differ. Similarities related to the sense of urgency in passing legislation, emphasis on national security and international concerns, selection criteria, use of MSS as a minimum level of data quality, and data ownership. The points of dissimilarity, as outlined during the hearing, had to do with marketing of data, the length of the contract, and the financial arrangements allowed or required.

The hearings served to clarify differences in the proposed language of the bill in relation to the Administration's RFP process. At the time of the hearing, the SEB was anticipating the RFP bids from private firms within two weeks. Significant was the fact that the Committee had informed the SEB early on of the provisions of the legislation so that the RFP and bill would be similar. The result would be better coordination, so that firms would be reasonably sure that the requirements of the RFP would not change after they had begun devoting resources to the preparation of their bids.

Committee Publication Numbers 53 and 74.

3.8(B)—Space Commercialization

In May of 1983, the Subcommittee met for four days of hearings to identify and evaluate major issues associated with space commercialization.

By the start of the 98th Congress, commercialization of space had become a major issue in discussions of the future of the U.S. space program. The Subcommittee set out to study the space commercialization issue with special attention to expendable launch vehicles at hearings held on May 3, 4, 17, and 18, 1983. The purpose of the first two hearings was to acquire an understanding of the broad topics that characterize space commercial ventures, and to explore the need for institutional and organizational changes that would encourage commercialization. The May 3 hearing coincided with the publication of the National Academy of Public Administration (NAPA) report entitled, "Encouraging Business Ventures in Space Technologies". Witnesses at this hearing included members of the NAPA panel that prepared the report and the NASA Administrator. On the second day, industry witnesses were invited to present views on existing contractual instruments that are used by NASA to stimulate joint NASA/private-sector space ventures.

The third and fourth hearings focused more specifically on the commercialization of launch vehicles. The latter hearings were held immediately after a White House news release was issued giving details of the Administration's policy on ELV commercialization. On the third day, Rep. Akaka and Department of Defense witnesses presented testimony using H.R. 1011, the "Space Commerce Act", as the basis for the discussion. The bill's intent was to encourage and regulate commercial development of space. On the following day, witnesses were drawn from companies that had expressed an interest in operating existing government ELVs or in developing new launch vehicles as commercial ventures.

Subsequent to this series of hearings, the Subcommittee issued a report, entitled, "Space Commercialization", summarizing testimony and highlighting conclusions and recommendations. The report concluded that a lead agency should be named for the purpose of acting as a focal point in government for coordinating and facilitating commercial space endeavors. Another conclusion stated that there is no clearly defined need for new legislative authority, but legislation defining responsibilities and authority of a lead agency and providing direction for government and industry would be valuable. Thus, the report recommended that the Subcommittee proceed with consideration of H.R. 1011, the "Space Commerce Act", taking into account suggestions made at the hearings. The Subcommittee also made recommendations that NASA establish a commercialization office and that the Agency should continue an R&D role whenever it is in the national interest, regardless of the fact that industry may have assumed a dominant operational role in a particular area.

H.R. 1011 was superseded by H.R. 3942, which was enacted into law as P.L. 98-575. A summary of the P.L. 98-575 is in Chapter I, Section 1.9.

Committee Publication Numbers 23, 85, and Serial R.

3.8(C)—Space Nuclear Reactors

The Subcommittee met jointly with the Subcommittee on Energy Research and Production on May 24, 1983, to review the status of the U.S. technology base in space nuclear electric power systems research and development. The purpose of this hearing was to gain an awareness of the present capabilities in this area and to begin addressing critical technical and policy issues in order to make nuclear power a viable option for civil and defense related space missions in the future.

Testimony was heard from several Department of Energy laboratories, the NASA Lewis Research Center, and corporations engaged in research related to this nuclear electric power option. Witnesses outlined accomplishments of prior and current research efforts and offered a preliminary evaluation of the problems remaining and the level of effort required to bring space nuclear power to a level of feasibility.

Committee Publication Number 25.

3.8(D)—Space Telescope

Space Telescope cost, schedule, and performance was the topic of hearings held on June 14 and 16, 1983. NASA has experienced serious growth in anticipated costs and schedule delays that, among other effects, will result in missing the opportunity for the U.S. to conduct a study of Halley's comet as it voyages around the sun in February 1986. Additional resources needed to complete the Space Telescope have hurt other space science activities. The purpose of the Subcommittee's hearings was to review events that led to the cost and schedule problems and to examine program changes that should improve performance of the Space Telescope program. As NASA's highest priority science program, the Space Telescope is one of the Agency's most advanced, intricate undertakings.

The Subcommittee sought testimony from the Administrator of NASA, the NASA field center responsible for overall management of the Space Telescope, as well as the direct management for activities being carried out by two major contractors. These two firms presented testimony to examine problems encountered in the optical telescope assembly and the support-systems module. Also presenting testimony was the director of the NASA center (Goddard) responsible for the ground operations system. The Space Telescope Science Institute (STScI) presented testimony with regard to science utilization. STScI is the independent institute run by astronomers who determine the observational program and disseminate data to users. STScI testimony discussed progress being made in preparing for these activities in coordination with other aspects of Space Telescope development.

Topics examined included management and coordination among the NASA headquarters, the two NASA centers involved, contractors, and unanticipated technical difficulties in developing the science instruments which resulted in cost overruns. These major problems included development of fine guidance sensors which will enable the space telescope to orient itself with respect to faint stars, material and design flaws associated with orbital replacement unit latches, and the need to keep the mirrors clean while the telescope is assembled. Also discussed was how the resultant cost overruns would impact funding and timing requirements for completing the Science Operations Ground System and staffing the Space Telescope Science Institute.

The review of Space Telescope cost, schedule, and performance was revisited during the second session of the 98th Congress with hearings on May 22 and 24, 1984. The hearings took place when the Space Telescope program was in transition out of the manufacturing phase and preparing for the assembly and integration phase in November. The requirements for maintenance and refurbishment were just becoming more defined. In addition, the Space Telescope Science Institute was taking final form.

The purpose of the May hearings, then, was to address three key issues. One aim was to determine what developmental problems remain and the likelihood of achieving scientific goals and specifications within the planned cost and schedule. Two, the Subcommittee wanted to compare the status of the Science Institute with the original plans, with respect to staffing requirements and coordina-

tion among science users. The plans involved a relatively unique organizational approach to science operations and data management, as outlined in a National Academy of Sciences study. The Science Institute was being structured to be as responsible as possible to user needs. Three, the Subcommittee sought to determine what will be involved in maintenance and refurbishment of the telescope after launch to ensure continuity in scientific returns.

Witnesses at the hearings included NASA Headquarters, the Directors of the NASA Centers sharing responsibility for Space Telescope, and several scientists who have had a close association with the program and who have held leadership roles with regard to the Science Institute.

Committee Publication Numbers 29, 30, and Serial JJ.

3.8(E)—NASA Five-Year Plan

The Subcommittee met on July 26 and July 28, 1983, to obtain a perspective on the longer-range of goals of NASA. The witnesses before the Subcommittee included NASA officals, including the Administrator, as well as the Associate Administrators from four major offices within the Agency: Space Flight, Aeronautics and Space Technology, Space Science and Applications, and Space Tracking and Data Systems.

In 1976, NASA began the practice of drafting each year a five-year plan. The plan under discussion at these hearings emphasized as major objectives: 1) to provide a creative environment with the best of facilities and support services for NASA personnel; 2) to make the STS fully operational and cost-effective; to contribute through aeronautics research and technology to the preeminence of U.S. civil and military aviation; 3) to explore requirements, operational concepts and technology regarding a permanent space facility; 4) to conduct a space and earth sciences program which expands human knowledge of the earth, its environment, the solar system, and the universe; 5) to conduct space applications and technology programs that contribute to U.S. leadership and national security; 6) to expand opportunity for U.S. private sector participants and investors in civil space-related activities; 7) to establish NASA as leader in advanced technology and management practices to contribute to the productivity of NASA and the nation.

Committee Publication Number 38.

3.8(F)—Space Station

On August 2, 1983, the Subcommittee met to review the status, plans, and activities associated with NASA's Space Station effort. Over nearly 25 years, NASA had conducted a number of space station studies, but thoughts of developing a space station were put on hold when the Agency proceeded with the development of a Space Transportation System; a parallel development was not pursued. By April of 1981, however, the Subcommittee had recommended development of "a manned, multi-purpose, open-ended space operating base in low-earth orbit", and NASA officials in July of 1981 publicly endorsed the objective of proceeding to plan for a space station.

At the August 1983 hearing on Space Station, the Subcommittee sought to determine what activities had taken place, and what interest the potential users had shown. Testimony was heard from the NASA Space Station Task Force and NASA's International Affairs Division, as well as the Senior Vice-President of the consulting firm Booz, Allen and Hamilton, Inc. The Task Force outlined parameters of a station that had been drawn up in anticipation of proposing a program, as well as potential users. The discussion of international affairs concerned participation and contributions to the station effort by foreign entities, and NASA suggested that to include foreign participation, the station should be modular in design. The consulting firm discussed findings of work it had done related to identifying the user community's perceptions of mission concepts, technical and economic barriers to development of a station, and industry financial interest in the space station.

Committee Publication Number 98–37.

3.8(G)—Materials Processing in Space (MPS)

The Subcommittee met on September 14 and 15, 1983, to review NASA's activities in the area of materials processing in space (MPS), hearing testimony from NASA, university researchers and industrial pharmaceutical researchers. The NASA MPS program emphasizes the science and technology of processing materials to understand constraints imposed by gravity and the unique capabilities made possible by conducting the processes in space. NASA supports projects that enable users to develop cost-effective experiments to better anticipate technical risks associated with experiment concepts before going on to develop more complex hardware.

As part of the Committee report language accompanying the NASA FY 1984 authorization bill, H.R. 2065, the Subcommittee stated its views regarding the continued increases in NASA's budget for MPS. Three views were stated: that NASA establish one or more university centers for basic research on separation and purification of organic materials; that NASA be aware of the value of MPS to private industry firms involved or interested in space commerce; and that the Agency not commit additional funds to the development of hardware but rather to the scientific definition of projects.

The hearings sought to determine NASA's long-range program plans and whether current activities are adequate to support long-range plans, to review program management, and to understand how the U.S. effort compares with that of other countries. In addition, the Subcommittee sought testimony on its recommendation regarding university centers.

The Subcommittee heard testimony from NASA on the ongoing program given the current budget levels, and MPS experts in private industry on commercial applications such as pharmaceutical research, and experts in the university community, some of whom conduct research in conjunction with the NASA program at the University of Arizona and at Pennsylvania State University.

In NASA testimony, the witness affirmed NASA's intent to honor the Subcommittee's mandate to establish university centers

for bioprocessing research, and NASA's proposed plans to delve more into microgravity research.

Committee Publication Number 98–42.

3.8(H)—Review of the National Aeronautics and Space Act of 1958, as Amended

During the FY 1984 NASA Authorization process, issues were raised concerning the adequacy of the Congressional charter for NASA after twenty-five years since enactment. Because of time constraints during the budget process, the Subcommittee planned to conduct hearings on the enabling legislation on a separate occasion. Thus, a review of the National Aeronautics and Space Act of 1958 was the purpose of hearings on October 18, 19, 25, and 26, 1983. The Subcommittee sought testimony to gain insight into the soundness of the provisions of the organic act, as amended, and to determine what alterations, if any, ought to be considered after twenty-five years since enactment of the original legislation.

A selection of witnesses included two Members of Congress, representatives from private industry, the chairmen of the National Academy of Sciences Space Applications Board and Space Science Board, a former NASA Chief Scientist, the Office of Technology Assessment, the current Administrator of NASA and several former Administrators. These witnesses reflected on the National Aeronautics and Space Act of 1958 in relation to their respective major concerns.

Major issues raised during the hearings concerned the adequacy, after twenty-five years, of the policy objectives of NASA's enabling legislation, the need for better long-range planning efforts, and the adequacy of the existing space policy advisory apparatus. Other issues raised concerned the balance among several NASA mandates including space science, space applications, management of shuttle operations, and the need for a fifth orbiter. International cooperation in space and NASA's role in commercialization were discussed in light of the Act's provisions, as was the NASA–DOD relationship.

Most of the witnesses testified that the Act remains a sound piece of legislation, flexible and uninhibiting to any future mission NASA might pursue. However, several witnesses did suggest that the Act should be strengthened with respect to emerging economic and commercial implications. Several enhancements to the Act were discussed at the hearings and shortly thereafter took root in legislative form. The NASA Authorization for FY 1985 (H.R. 5154) made two changes to the organic act, to enhance NASA's work in the commercialization area, and in the earth sciences.

Discussions regarding the need for long range planning led to the development of a National Commission on Space (established as Title II of H.R. 5154), which will assist in articulating long-range goals for civilian space activity.

Committee Publication Numbers 98–57 and 98–EE.

3.8(I)—Initiatives in Space Commercialization

On June 19, 1984, the Subcommittee met to hear testimony regarding space commercialization initiatives. Prior to this hearing,

the Subcommittee had met on numerous occasions to examine and evaluate initiatives designed to promote commercial space activities. Previously, in a 1983 report on space commercialization, the Committee recommended that NASA support space commercialization by providing industry with technical assistance and by establishing within NASA an office for space commercialization, reporting directly to the Administrator.

At the June hearings, the Subcommittee sought to elicit from industry and the Administration recommendations on what government actions might increase prospects for commercial development and utilization of application payloads and enabling technology. The Subcommittee expected recommendations to be based on the findings of the most recent space commercialization studies conducted by the Administration and industry.

The NASA Administrator was invited to address in his testimony findings of a report expected to be released from NASA by the Space Commercialization Task Force. His remarks remained within constraints imposed by OMB.

A panel of three industry witnesses in a separate White House study on space commercialization were invited by the Subcommittee to report on recommendations they have made with regard to government actions. Their recommendations would have bearing upon the Administration's policy on space commercialization. Remarks dealt with the regulatory atmosphere, joint endeavor opportunities with respect to in-space manufacturing and in-space research, tax incentives and shuttle pricing.

Further testimony was heard from Mr. Zschau (R-CA), who voiced support for promoting space activities in the private sector. He compared the current space commercialization situation with the dawn of the semiconductor industry, and stated that now is the time when government policy should help the U.S. make the transition from basic research into commercialization by providing incentives for risk-taking.

Major questions addressed included 1) the status of the Administration's policy position on space commercialization, 2) the role and functions of the government and NASA in support of the commercialization of space, 3) what actions the government should take to increase prospects for commercial development of applications payloads and enabling technologies, 4) economic incentives and legal/regulatory approaches the government should consider, and 5) what provisions Congressional action, if necessary, should include.

Committee Publication Number 98-108.

3.8(J)—International Cooperation and Competition in Space

On July 25, 1984, the Subcommittee conducted a hearing to explore how best to reorient the U.S. civil space policies to effectively respond to expanded opportunities and growing challenges brought about as other nations develop sophisticated space capabilities. The Subcommittee discussed issues related to international cooperation and competition in space, particularly in relation to a report prepared by the Office of Technology Assessment at the request of the Subcommittee in 1982 on the subject. This report was undertaken

to compare U.S. and foreign space systems with respect to management, economics and technical performance.

The Subcommittee requested that OTA identify the most important issues affecting U.S. cooperation and competition that require Congressional oversight and legislation. OTA answered with the following: 1) the need for more effective coordination in the U.S. among the relevant Federal Government agencies and the private sector with regard to space activities in order to better respond to growing international competition in space; and 2) the need to more effectively involve the private sector in space by reducing economic and technological barriers in order to encourage private investment. OTA recommended ways to meet these needs.

Testimony from NASA summarized agency international activity, as well as steps planned to meet competitive challenges such as reducing STS costs and continuing research in communications and remote sensing technologies. Also emphasized is the need for cooperation to promote the peaceful uses of outer space.

State Department testimony described U.S. activities with regard to COPUOS and pointed out the change in focus away from scientific and technical issues and thus the politization of an international forum for promoting the peaceful uses of outer space, citing these as reasons for the decline in U.S. involvement.

NOAA testimony described international cooperative activities in various satellite development projects, as well as the functions of international coordinating committees. The witness further outlines the status of understandings with foreign governments with regard to Landsat data.

Committee Publication Number 98–104.

3.8(K)—Space Shuttle Requirements, Operations and Future Plans

The purpose of three days of hearings held July 31, August 1, and August 2, 1984, was to review the current status, evolving trends and philosophies and future plans for the operational management and utilization of the Space Transportation System. Testimony was obtained from a selection of witnesses representing NASA, DOD, NASA advisory panels, and the civil user community.

As the Shuttle evolves from the Research and Development phase to an operational status, it has demonstrated flexibility and reliability. However, it has also become evident that the Shuttle program will need major improvements, both in the planning and execution of missions, and in the turnaround time in which flight equipment can be readied for the next mission.

While operating the Space Transportation System and concentrating on these needed improvements, program manager will face the task of reducing time lines and operating costs while maintaining high qualify control and flight safety.

Several key issues were raised in the hearings and discussed further in a Subcommittee report on the hearings. The Subcommittee note NASA's appointment of a Shuttle Operations Strategic Planning Group to study the extent to which NASA might separate the personnel, budget and facilities associated with Shuttle operations from other NASA programs. This Group would also determine

whether Shuttle operations should at some point be transferred to the private sector.

The Subcommittee received testimony from the various field centers that share responsibility for management of Shuttle logistics, and the Subcommittee recommended that NASA consolidate the logistics management responsibility into a single NASA field center.

Testimony from the user community and NASA advisory panels suggested that NASA continue providing expendable launch vehicle services as an alternative until the Space Transportation System reashes operation maturity.

The user community testimony consistently expressed the view that NASA must continue to seek user input in order to make the Space Shuttle responsive and accommodating to user requirements.

Committee Publication Numbers 98-102 and 98-GG.

3.8(L)—International Geosphere/Biosphere Program

On Septerber 12 and 13, 1984, the subcommittee conducted a hearing to discuss how the U.S. should proceed in formulating a policy on a proposed International Geosphere/Biosphere Program (IGBP).

The need for a coordinated, international study of global scientific problems was recognized 27 years ago during the International Geophysical Year (IGY). Since then the Subcommittee has recognized the need to solve many biological and ecological problems such as acid rain, the "greenhouse effect," desertification and deforestation, ozone-freon, and the world food supply. These diverse and vital problems could be most effectively dealt with in a multidiscriplinary, international coordinated effort called IGBP.

Report language affirming the Committee's commitment to this effort appeared in FY 1985 authorizations bills for DOE, NSF, NASA, and in the Landsat commercialization bill. The Subcommittee sought testimony during the September hearings from DOE, NSF, NASA, and NOAA to obtain the agencies' response to the committee report language; from scientists involved in coordinating the IGBP, and from other scientists for their insights on the goals and structure of the proposed program. Testimony clarified 1) the definition of IGBP, both organizationally and scientifically; 2) which agencies should take part; 3) what the current status is; 4) what real benefits would flow from such a program, and 5) how an IGBP would set up a data system.

Committee Publication Number 98-118.

CHAPTER IV—PUBLICATIONS OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY—98TH CONGRESS

HEARINGS

Date	Title	Publication No.
Mar. 22, 23, 1983	1984 NBS Authorization (H.R. 2513)	1.
Feb. 23, 24, 1983	1984 DOE Authorization (Transportation Programs) (H.R. 2587).	2.
Feb. 9, 1983	1984 NASA Authorization (Vol. I) (H.R. 2065).	3.
Mar. 10, 17, 1983	1984 DOE Authorization (Uranium Enrichment and Electric Energy Systems and Storage Systems) (Vol. VI) (H.R. 2587).	4.
Mar. 23, 1983	1984 FAA R&D Authorization	5.
Apr. 6, 7, 1983	Job Forecasting	6.
Mar. 23, 24, 1983	Biological Clocks and Shift Work Scheduling.	7.
Mar. 15, 16, 1983	Earthquake and Fire Act Authorization (H.R. 2465).	8.
Feb. 24; Mar. 2, 3, 16, 17, 1983.	1984 DOE Authorization (Fossil Energy and Basic Research) (Vol. III) (H.R. 2587).	9.
Mar. 8, 9, 10, 15, 1983.	1984 DOE Authorization (Conservation and Renewable Energy) (Vol. II) (H.R. 2587).	10.
May 2, 1983	Joint Services Advanced Vertical Wing (JVX) Program.	11.
Feb. 8; Mar. 14, 1983.	1984 DOE Authorization (Vol. I) (H.R. 2587).	12.
July 19, 1983	Flight of STS–7 with Astronauts Capt. Robert L. Crippen, Capt. Frederick H. Hauk, Col. John M. Fabian, Dr. Sally K. Ride, and Dr. Norman E. Thagard.	13.
Apr. 15, 1983	Energy and Rural Development: What is Needed, What is Being Done.	14.
June 27, 1983	Aircraft Maintenance and Fire	15.
Apr. 13, 14, 27, 1983	Organ Transplants	16.
Feb. 3, 8, 10, 22, 23, 24, 25, 26, 28; Mar. 1, 2, 3, 1983.	1984 NASA Authorization (Vol. II) (H.R. 2065).	17.
Feb. 22, 23, 24; Mar. 2, 8, 9, 1983.	1984 DOE Authorization (Nuclear Fission R&D and Waste Management (H.R. IV) (H.R. 2587).	18.
Sep. 15, 1983	Alternative Financing Plan for the Clinch River Breeder Reactor Project.	19.
June 14, 15, 1983	Computers and Their Role in Energy Research: Current Status and Future Needs.	20.
Feb. 23, 25; Mar. 1, 8, 10, 1983.	1984 NSF Authorization (H.R. 2066)	21.
June 9, 15, 16, 1983	Transportation Infrastructure Research and Technology.	22.
May 3, 4, 17, 18, 1983.	Space Commercialization	23.

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Date	Title	Publication No.
July 18, 1983	Technology of Airport Safety	24.
May 24, 1983	The Space Nuclear Reactor Program	25.
July 12, 21, 1983	Tax Incentives for New Energy Technologies.	26.
June 22, 1983	Lower Oil Prices and Their Implications for Energy Research and Development Policy.	27.
Mar. 30; May 4, 1983.	Hazardous Waste Disposal	28.
June 14, 16, 1983	Space Telescope Cost, Schedule, and Performance.	29.
Mar. 16, 17, 1983	1984 DOE Authorization (Magnetic Fusion Energy) (Vol. V) (H.R. 2587).	30.
Feb. 3, 1983	1983 Science and Technology Posture Hearing with the Director, Office of Science and Technology Policy.	31.
May 13, 1983	Joint Industry/University Cooperation with Federally-Supported Research Facilities.	32.
Sep. 19, 1983	Aircraft Navigation Technology and Errors.	33.
Feb. 23, 1983	Views on Science Policy of the Nobel Laureates for 1982.	34.
July 14, 1983	The Role of the Federal Government in Human Nutrition Research (Joint Hearing with the Committee on Agriculture).	35.
June 22, 1983	Environmental Implications of Genetic Engineering.	36.
Aug. 2, 1983	NASA's Space Station Activities	37.
July 26, 28, 1983	NASA's Five-year Plan	38.
Sep. 27, 1983	Flight of STS-8 with Astronauts Capt. Richard H. Truly, Comdr. Daniel C. Brandenstein, Lt. Comdr. Dale A. Gardner, Lt. Col. Guion S. Bluford, Jr., and William Edgar Thornton, M.D.	39.
Aug. 29, 1983	Alternative Fuels for General Aviation	40.
June 7, 9, 10, 14, 15, 16, 23, 1983.	Technology and Employment (Joint Hearings with the Committee on the Budget).	41.
Sep. 14, 15, 1983	Review of Materials Processing in Space	42.
July 12, 1983	Research and Development Joint Ventures (H.R. 3393).	43.
July 11, 1983	The Impact of Mercury Releases at the Oak Ridge Complex.	44.
June 29, 30, 1983	Japanese Technological Advances and Possible United States Responses Using Research Joint Ventures.	45.
Sep. 26; Oct. 17, 24, 1983.	Computer and Communications Security and Privacy.	46.
Nov. 15, 16, 1983	Supercomputers	47.
May 17, 18, 19; June 24, 1983.	Materials Research and Development Policy.	48.
July 28, 1983	Uranium Enrichment	49.
July 25, 1983	Postharvest Technology	50.
Nov. 9, 1983	Developing Technologies for Television Captioning: Benefits for the Hearing Impaired.	51.
Dec. 5, 1983	Future of Aeronautics	52.

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Date	Title	Publication No.
Apr. 14; June 21, 28; July 14, 21; Nov. 8, 9, 1983.	The Commercialization of Meteorological and Land Remote-Sensing Satellites.	53.
Aug. 2, 3, 1983	Indoor Air Quality Research	54.
Oct. 19, 1983	High Energy Physics Facilities	55.
June 28, 1983	Arctic Research and Policy Act of 1983 (H.R. 2292).	56.
Oct. 18, 19, 25, 26, 1983.	Review of the National Aeronautics and Space Act of 1958.	57.
Apr. 19, 1983	DOE Fiscal Year 1984 Budget for Environmental Programs.	58.
Mar. 3, 1983	Link Between the Environment and Cancer: DOE's Research Efforts.	59.
Apr. 5, 1983	Man and the Biosphere Program	60.
July 30, 1983	Furley Hazardous Waste Landfill	61.
Oct. 20, 1983	DOE's Comprehensive Program Management Plan for Magnetic Fusion Energy.	62.
Nov. 16, 17, 1983	The Role of Information Technology in Emergency Management.	63.
Sep. 28, 29, 1983	Computers and Education	64.
Oct. 25, 1983	Agriculture and Water Use: Present and Future Issues.	65.
Mar. 31, 1983	Agriculture Weather Services	66.
Mar. 1, 9, 1983	Fiscal Year 1984 NOAA Authorization	67.
Mar. 23, 1983	EPA Oversight on Dioxin Contamination.	68.
Feb. 9, 1984	1985 NASA Authorization (Vol. I)	69.
May 19, 26; June 2, 1983.	National Environmental Monitoring	70.
Nov. 7, 9, 1983	Procurement and Allocation of Human Organs for Transplantation.	71.
Oct. 13, 14, 1983	Forecasting and Technology for Water Management.	72.
Feb. 21, 22, 1984	1985 DOE Authorization (Transportation Programs).	73.
Mar. 6, 1984	The Land Remote-Sensing Commercialization Act of 1984—H.R. 4836 and H.R. 5155.	74.
Sep. 13, 20, 1983	Acid Rain: Implications for Fossil R&D	75.
Mar. 21, 1984	Airport Safety Technology—Washington National Airport.	76.
Mar. 13, 1984	1985 DOE Authorization (Vol. I)	77.
June 30; July 13, 28, 1983.	Dioxin—The Impact on Human Health	78.
Mar. 26, 28, 29, 1984.	Oversight on the Federal Aviation Administration Fiscal Year 1985 Research Engineering and Development Budget Request.	79.
Mar. 14, 1984	The EPA's Office of Research and Development and Related Issues.	80.
Sep. 23, 1983	Hurricane Alicia—Its Prediction, Damage, and Recovery Efforts.	81.
Apr. 25, 1984	Structural Failures	82.
May 15, 1984	Results of Space Shuttle Slight 41-C	83.
Feb. 1, 2, 7, 8, 9, 22, 23, 28; Mar. 1, 1984.	1985 NASA Authorization (Vol. II)	84.
Nov. 18, 1983; Mar. 29, 1984.	The Expendable Launch Vehicle Commercialization Act.	85.

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Date	Title	Publication No.
May 15, 16, 1984	H.R. 5003—the Uniform Science and Technology Research and Development Utilization Act.	86.
Feb. 22, 28; Mar. 7, 1984.	1985 DOE Authorization (Uranium Enrichment, Electric Energy Systems and Storage Programs) (Vol. VI).	87.
Feb. 23, 29, 1984	1985 DOE Authorization (Magnetic Fusion Energy) (Vol. V).	88.
Feb. 7, 8, 9, 1984	1985 DOE Authorization (Nuclear Fission R&D and Waste Management) (Vol. IV).	89.
May 22, 24, 1984	Space Telescope: 1984	90.
Feb. 2, 7, 1984	1985 NBS Authorization	91.
Apr. 26, 1984	Methane-Fueled Vehicle RD&D	92.
Feb. 3, 9, 28, 29; Mar. 21, 1984.	1985 NSF Authorization	93.
May 8, 1984	Improving the Research Infrastructure at U.S. Universities and Colleges.	94.
Mar. 6, 7, 1984	The Availability of Japanese Scientific and Technical Information in the United States.	95.
May 16, 1984	Hazardous Waste Management	96.
Mar. 24, 1983	Guayule Research	97.
Oct. 14, 1983; June 22, 1984.	Fire Prevention and Control	98.
Feb. 9, 16, 1983	H.R. 1310—Emergency Mathematics and Science Education Act.	99.
May 24, 1984	Scientific Communications and National Security.	100.
Feb. 28, 29; Mar. 1, 6, 7, 8, 1984.	1985 DOE Authorization (Fossil Energy, Conservation and Renewable Energy) (Vol. III).	101.
July 31; Aug. 1, 2, 1984.	Space Shuttle Requirements, Operations and Future Plans.	102.
July 27, 1984	Rail Track Safety Monitoring Technology.	103.
July 25, 1984	International Cooperation and Competition in Space.	104.
Aug. 6, 1984	Subliminal Communications Technology	105.
June 6, 7, 13, 1984	The Status of Synthetic Fuels and Cost-Shared Energy R&D Facilities.	106.
June 5, 1984	H.R. 3750, The Computer Literacy Act and H.R. 4628, The National Educational Software Act.	107.
June 19, 1984	Initiatives to Promote Space Commercialization.	108.
July 24, 1984	Aircraft Navigation and Landing Technology: Status of Implementation.	109.
Mar. 6, 13, 1984	Cancer and Other Human Diseases: DOE Research Programs.	110.
May 21, 1984	Ultralight Aircraft Technology and Public Safety.	111.
July 25, 1984	Wind Shear Detection Technology	112.
Mar. 10; Apr. 19, 27, 1983.	1984 EPA Research and Development Authorization.	113.
June 6, 1984	The Status and Implications of Oncogene Research.	114.
Sep. 25, 1984	Results of Space Shuttle Flight 41-D	115.
Feb. 22, 1984	1985 DOE Authorization (High Energy and Nuclear Physics) (Vol. II-A).	116.
Feb. 22, 1984	1985 DOE Authorization (HIgh Energy and Nuclear Physics) (Vol. II-B).	117.

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Date	Title	Publication No.
Sep. 12, 13, 1984	International Geosphere/Biosphere Program.	118.
Feb. 28, 1984	Carbon Dioxide and the Greenhouse Effect.	119.
May 23; Sep. 12, 1984.	Earthquakes in the Eastern United States.	
May 22, 1984	Lessons Learned in Utility Management and the Status of the R&D Program Following the Accident at Three Mile Island.	*125.*
Feb. 23, 1984	1985 DOE Authorization (Supporting Research and Technical Analysis) (Vol. VII-A).	
Feb. 23, 1984	1985 DOE Authorization (Supporting Research and Technical Analysis) (Vol. VII-B).	
June 7, 12, 13, 14, 1984.	Federal Organization for Technological Innovation.	
Aug. 16, 17, 1984	Proceedings of the Tri-Committee Business Advisory Panel on Uranium Enrichment (Joint Meetings with the Committee on Energy and Commerce and the Committee on Interior and Insular Affairs).	*121.*
July 26, 1984	The Status of the Technical Infrastructure to Support Domestic Food Irradiation.	*122.*
Feb. 10, 1984	Science and Math Education	
June 20, 1984	H.R. 4684—National Nutrition Monitoring and Related Research Act of 1984.	*124.*
Sep. 24, 1984	Computer and Communications Security and Privacy.	*123.*
Mar. 28, 1984	Environmental Monitoring Improvement Act.	
Apr. 22, 1983	Hazardous Waste and the Stringfellow Acid Pits.	
June 3, 1984	Hazardous Waste Sites in Bergen County, New Jersey.	
Aug. 9, 1984	Hurricane Storm Surge Research	
Sep. 12, 1984	The Climatic Biological and Strategic Effects of Nuclear War.	
Mar. 8, 15, 1984	Impact on U.S. Scientific Research of Proposal to Withdraw from UNESCO.	*120.*
May 17; June 5, 1984.	H.R. 4192—the Risk Assessment Research and Demonstration Act of 1983.	
Sep. 25, 1984	Conversion of Research and Test Reactors to Low-Enriched Uranium (LEU) Fuel.	
Jan. 24, 1984	Five-year Outlook Report on Science and Technology.	
Feb. 1, 1984	Posture Hearing on Fiscal Year 1985 Federal Budget.	
Mar. 8, 1984	Views on Science Policy of the 1983 U.S. Nobel Laureates in Science.	
June 27, 28, 1984	Agricultural Weather Services (Joint Hearings with the Committee on Agriculture).	
July 6; Aug. 14, 1984.	Developments in the Production and Use of Ethanol Fuels (Joint Hearings with the Committee on Agriculture).	
Aug. 1, 1984	Federal Emergency Management Agency (FEMA).	

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Date	Title	Publication No.
Aug. 8, 9, 1984	Human Embryo Transfer	
Aug. 30; Sep. 19, 20, 1984.	Alzheimer's Disease Research	
Sep. 18, 1984	U.S.-Soviet Satellite Accord: SARSAT/COSPAS Search-and-Rescue Program.	
Sep. 19, 1984	Tropical Forest Development Projects: Status of Environmental and Agricultural Research.	
Oct. 18, 1984	Field Briefing on Tornado Prediction and Preparedness in the Carolinas During the Severe Weather of March 28, 1984.	
Oct. 9, 24; Dec. 12, 1984.	Oversight—Federal Emergency Management Agency.	
Dec. 18, 1984	Antibiotic Resistance.	

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Date	Title	Publication No.
January 1983	Pacific Basin Study Mission	A.
March 1983	A Review of Risk Assessment Methodologies.	B.
Feb. 25, 1983	National Engineering and Science Personnel Act (Report to accompany H.R. 1310).	H.Rept. 98-6:2
March 1983	Seventh Biennial Conference on National Materials Policy.	C.
April 1983	Subjects and Policy Areas for the Consideration of the House Committee on Science and Technology.	D.
January 1983	The National Science Board: Science Policy and Management for the National Science Foundation 1968-1980.	E.
April 1983	Space Activities of the United States, Soviet Union, and Other Launching Countries/Organizations: 1957-1983.	F.
May 1983	Building Energy Research Workshop	G.
June 1983	Commercialization of Land and Weather Satellites.	H.
June 1983	European Study Mission	I.
April 1983	Astronauts and Cosmonauts Biographical and Statistical Date (Revised March 31, 1983).	J.
April 15, 1983	Authorizing Appropriations to the National Aeronautics and Space Administration for Fiscal Year 1984 (Report to accompany H.R. 2065).	H.Rept. 98-65
April 26, 1983	Authorizing Appropriations to the National Science Foundation (Report to accompany H.R. 2066).	H.Rept. 98-73
May 3, 1983	Department of Energy Civilian Research and Development Authorization Act for Fiscal Year 1984 (Report to accompany H.R. 2587).	H.Rept. 98-81
May 9, 1983	Technical Information Clearinghouse Fund Act of 1983 (Report to accompany H.R. 2514).	H.Rept. 98-94:1

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Date	Title	Publication No.
May 9, 1983	Authorizing Appropriations to the National Bureau of Standards for Fiscal Year 1984 (Report to accompany H.R. 2513).	H.Rept. 98-95
May 16, 1983	Earthquake Hazards Reduction Act of 1977 and Federal Fire Prevention and Control Act of 1974; Authorizations for Fiscal Years 1984 and 1985 (Report to accompany H.R. 2465).	H.Rept. 98-99:2
May 16, 1983	Reauthorization of Native Latex Program; Inclusion of Other Critical Agricultural (Report to accompany H.R. 2733).	H.Rept. 98-109:2
May 16, 1983	Authorization for National Oceanic and Atmospheric Administration for Fiscal Years 1984 and 1985 (Report to accompany H.R. 2900).	H.Rept. 98-135:1
May 16, 1983	Authorizing Appropriations to the Office of Research and Development, Environmental Protection Agency, for Fiscal Years 1984 and 1985 (Report to accompany H.R. 2899).	H.Rept. 98-212:1
May 24, 1983	A Review of the Scientific and Technological Issues in the Regulation of Cotton Dust in Primary Cotton Textile Industry.	H.Rept. 98-215
May 24, 1983	Review of the Scientific Basis of the Environmental Protection Agency's Carcinogenic Risk Assessment on Fomaldehyde.	H.Rept. 98-216
Aug. 3, 1983	The Consequences of Nuclear War on the Global Environment.	H.Rept. 98-344
April 1983	U.S. Science and Engineering Education and Manpower: Background; Supply and Demand; and Comparison with Japan, the Soviet Union, and West Germany.	K.
June 1983	Mitigating Acid Rain with Technology: Avoiding the Scrubbing-Switching Dilemma.	L.
May 1983	United States Civilian Space Program—Applications and Satellites (Vol. II).	M.
July 1983	A Multi-Year Framework for Federal Solar Energy Research and Development.	N.
October 1983	National Aeronautics and Space Act of 1958, As Amended, and Related Legislation.	O.
October 1983	The Training and Utilization of Scientific and Engineering Manpower in the People's Republic of China—Background Study No. 5.	P.
October 1983	Animal Sciences: Advances in Reproductive and Health Technologies.	Q.
October 1983	Space Commercialization	R.
October 1983	Airport and Aircraft Safety Research and Technology.	S.
December 1983	Nuclear Safeguards: A Reader	T.
January 1984	Biological Clocks and Shift Work Scheduling.	U.
February 1984	The Environmental Implications of Genetic Engineering.	V.

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Date	Title	Publication No.
September 1983	Science, Technology, and American Diplomacy 1983 (Joint Print with the Committee on Foreign Affairs).	W.
April 1984	Science, Technology, and American Diplomacy 1984 (Joint Print with the Committee on Foreign Affairs).	X.
April 1984	Space Activities of the United States, Soviet Union, and Other Launching Countries/Organization: 1957–1983.	Y.
Nov. 8, 1983	Transfer of Civil Meteorological Satellites (Report to accompany H.Con.Res. 168).	H.Rept. 98–509
Nov. 8, 1983	Satellite-Directed Navigational Guidance for Aircraft (Report to accompany H.Con.Res. 190).	H.Rept. 98–510
Nov. 17, 1983	The Extent and Impact of Mercury Releases and Other Pollutants at the Department of Energy's Oak Ridge Complex at Oak Ridge, Tennessee.	H.Rept. 98–558
Nov. 18, 1983	Research and Development Joint Venture Act of 1983 (Report to accompany H.R. 4043).	H.Rept. 98–571:1
Jan. 31, 1984	Providing Comprehensive National Policy Dealing with National Needs and Objectives in the Arctic and National Materials Policy (Report to accompany S.373).	H.Rept. 98–593:1
Mar. 15, 1984	Structural Failures in Public Facilities	H.Rept. 98–621
Mar. 21, 1984	Authorizing Appropriations to the National Aeronautics and Space Administration for Fiscal Year 1985 (Report to accompany H.R. 5154).	H.Rept. 98–629
Apr. 3, 1984	Land Remote-Sensing Commercialization Act of 1984 (Report to accompany H.R. 5155).	H.Rept. 98–647
Apr. 4, 1984	Authorizing Appropriations to the National Bureau of Standards for Fiscal Years 1984 and 1985 (Report to accompany H.R. 5172).	H.Rept. 98–650
Apr. 12, 1984	Department of Energy Civilian Research and Development Authorization Act for Fiscal Years 1985, 1986, 1987 (Report to accompany H.R. 5244).	H.Rept. 98–686
Apr. 12, 1984	Department of Energy Civilian Energy Programs Authorization Act for Fiscal Years 1985, 1986, 1987 (Report to accompany H.R. 5245).	H.Rept. 98–688:1
May 31, 1984	Commercial Space Launch Act (Report to accompany H.R. 3942).	H.Rept. 98–816
June 27, 1984	Authorizing Appropriations for the National Aeronautics and Space Administration (Conference Report to accompany H.R. 5154).	H.Rept. 98–873
April 1984	Building Energy Equipment Workshop	Z.
April 1984	Computer and Communications Security and Privacy.	AA.
May 1984	Highway Transportation Infrastructure Research and Technology.	BB.
Aug. 15, 1984	Computer Literacy Act of 1983 (Report to accompany H.R. 3750).	H.Rept. 98–752:2

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Date	Title	Publication No.
Aug. 15, 1984	Uniform Science and Technology Research and Development Utilization Act (Report to accompany H.R. 5003).	H.Rept. 98-983:1
October 1984	Carbon Dioxide, the Greenhouse Effect, and Climate: A Primer.	CC.
October 1984	Summary and Analysis of Hearing on Improving the Research Infrastructure at U.S. Universities and Colleges.	DD.
Sept. 21, 1984	To Promote Research and Development, Encourage Innovation, Stimulate Trade, and Make Necessary and Appropriate Amendments to the Antitrust, Patent, and Copyright Laws (Conference Report to accompany S.1841, which incorporates provisions of H.R. 4043).	H.Rept. 98-1044
Sept. 25, 1984	To Establish a Coordinated National Nutrition Monitoring and Related Research Program (Report to accompany H.R. 4684).	H.Rept. 98-1076:1
Sept. 25, 1984	To Establish a Program to Conduct Research and Development for Improved Manufacturing Technologies (Report to accompany S.1286).	H.Rept. 98-1078
Sept. 28, 1984	Authorizing Appropriations for the National Oceanic and Atmospheric Administration (Report to accompany S.1097/H.R. 2900).	H.Rept. 98-1093
September 1984	Review of the National Aeronautics and Space Act of 1958, as Amended.	EE.
October 1984	European Oversight Trip	FF.
October 1984	Review of Space Shuttle Requirements, Operations, and Future Plans.	GG.
Oct. 9, 1984	Information Technology for Emergency Management.	HH.
October 1984	Recent Advances in the Plant Sciences: Applications to Agriculture and Agricultural Products.	II
October 1984	Space Telescope Cost, Schedule, and Performance Review 1984.	JJ.
October 1984	Japanese Technological Advances and Possible U.S. Responses Using Research Joint Ventures.	KK.
November 1984	The Availability of Japanese Scientific and Technical Information in the United States.	LL.
December 1984	A Proposed Agenda for a Study of Government Science Policy.	
December 1984	Reports Submitted by NASA in Response to Committee Requests.	
Jan. 3, 1985	SUMMARY OF ACTIVITIES	H.Rept. 98-1189

APPENDIX

MEMBERS OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY 98th CONGRESS, INDIVIDUAL DATA

Member	State/district	House of Representatives service	Committee service	Other committee assignments/ 98th
		DEMOCRATS		
Don Fuqua	FL/2nd	1963-	1963-	Government Operations.
Robert A. Roe	NJ/8th	1969-	1971-	Public Works and Transportation.
George E. Brown, Jr.	CA/36th	1963-1970 1973-	1965-1970 1973-	Agriculture.
James H. Scheuer.	NY/8th	1965-1972 1975-	1975-	Energy and Commerce; Joint Economic Committee; Select Committee on Narcotics Abuse and Control.
Richard L. Ottinger.	NY/20th	1965-1970 1975-1984	1975-1984	Energy and Commerce.
Tom Harkin	Iowa/5th	1975-1984	1975-1984	Agriculture.
Marilyn Lloyd	TN/3rd	1975-	1975-	Armed Services; Select Committee on Aging.
* Timothy E. Wirth.	CO/2nd	1975-	1975-	Budget; Energy and Commerce.
Doug Walgren	PA/18th	1977-	1977-	Energy and Commerce.
Dan Glickman	KS/4th	1977-	1977-	Agriculture; Judiciary.
Albert Gore, Jr.	TN/6th	1977-1984	1977-1984	Energy and Commerce; Permanent Select Committee on Intelligence.
Robert A. Young	MO/2nd	1977-	1977-	Public Works and Transportation.
Harold L. Volkmer.	MO/9th	1977-	1977-	Agriculture.
* Howard Wolpe	MI/3rd	1979-	1979-	Budget; Foreign Affairs.
Bill Nelson	FL/11th	1979-	1979-	Budget.
Stan Lundine	NY/34th	1976-	1979-	Banking, Finance and Urban Affairs; Select Committee on Aging.
Ralph M. Hall	TX/4th	1981-	1981-	Energy and Commerce.
Dave McCurdy	OK/4th	1981-	1981-	Armed Services; Permanent Select Committee on Intelligence.
Mervyn M. Dymally.	CA/31st	1981-	1981-	District of Columbia; Foreign Affairs.
Paul Simon	IL/22nd	1975-1984	1983-1984	Education and Labor.

MEMBERS OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY 98th CONGRESS, INDIVIDUAL DATA—Continued

Member	State/district	House of Representatives service	Committee service	Other committee assignments/ 98th
Norman Y. Mineta.	CA/30th	1975–	1983–	Public Works and Transportation; Permanent Select Committee on Intelligence.
Richard J. Durbin.	IL/20th	1983–	1983–	Agriculture.
Michael A. Andrews.	TX/25th	1983–	1983–	Public Works and Transportation.
Buddy MacKay.....	FL/6th	1983–	1983–	Government Operations; Select Committee on Aging.
Tim Valentine	NC/2nd	1983–	1983–	Public Works and Transportation.
Harry M. Reid	NV/1st	1983–	1983–	Foreign Affairs; Select Committee on Aging.
Robert G. Torricelli.	NJ/9th	1983–	1983–	Foreign Affairs.
Frederick C. Boucher.	VA/9th	1983–	1983–	Education and Labor; Select Committee on Aging.
		REPUBLICANS		
Larry Winn, Jr	KS/3rd	1967–1984	1967–1984	Foreign Affairs.
Manuel Lujan, Jr.	NM/1st	1969–	1977–	Interior and Insular Affairs.
Robert S. Walker..	PA/16th	1977–	1977–	Government Operations.
William Carney	NY/1st	1979–	1979–	Merchant Marine and Fisheries.
F. James Sensenbrenner.	WI/9th	1979–	1981–	Judiciary.
Judd Gregg.....	NH/2nd	1981–	1981–1984	Government Operations; Select Committee on Aging.
Raymond J. McGrath.	NY/5th	1981–	1981–1984	Government Operations.
Joe Skeen.....	NM/2nd	1981–	1981–1984	Agriculture.
Claudine Schneider.	RI/2nd	1981–	1981–	Merchant Marine and Fisheries; Select Committee on Aging.
Bill Lowery.....	CA/41st	1973–	1981–1984	Banking, Finance and Urban Affairs.
Rod Chandler.....	WA/8th	1983–	1983–	House Administration; Joint Committee on the Library; Joint Committee on Printing.
Herbert H. Bateman.	VA/1st	1983–	1983–	Merchant Marine and Fisheries;
Sherwood L. Boehlert.	NY/25th	1983–	1983–	Small Business.
Alfred A. McCandless.	CA/37th	1983–	1983–	Government Operations.
Tom Lewis.....	FL/12th	1983–	1983–	Government Operations; Select Committee on Narcotics Abuse and Control.

* Serving on Committee on the Budget for 98th Congress.